University of Utah

College of Nursing

Building Renovation Program Document

ajc architect

DFCM Project #07260750 June 11, 2008

Review Signatures

University of Utah College of Nursing
Building Renovation Program Document

DFCM Project #07260750

We have reviewed the College of Nursing Program Document and warrant that it adequately represents our request for a facility to fulfill our mission and programmatic needs. All appropriate parties representing the University have reviewed it for approval.

Maureen Keefe — Date
Dean, College of Nursing

Steven D. Panish — Date
Assistant Vice President, Health Sciences

Michael G. Perez — Date
Associate Vice President, Facilities Management

Kristin Hill — Date
Project Manager, Campus Design & Construction

Bill Bowen — Date
Project Manager, DFCM

Review Signatures (continued)

University of Utah College of Nursing
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Facilities Planning | Date

Director, Plant Operations | Date

Director, Campus Design & Construction | Date

Associate Vice President, Administrative Services | Date

Participants

The following is a list of individuals and groups represented during the College of Nursing Programming process:

Working Committee

Maureen Keefe	Dean, College of Nursing
Catherine Coda	Assistant Dean, College of Nursing
Susan Beck	Professor, College of Nursing
Jane Dyer	Assistant Professor, College of Nursing
Alexa Doig	Assistant Professor, College of Nursing
Steve Panish	Assistant VP, Health Sciences

University of Utah

Joseph Harman	Project Manager, Campus Design and Construction
Kristin Hill	Project Manager, Campus Design and Construction
Tami Cleveland	Planner, Facilities Planning
Matt Yurick	Space Planning

State of Utah, Division of Facilities Construction and Management

Bill Bowen	Project Manager

Program Architects and Consultants

Jill A. Jones, AIA	ajc architects
Mehrdad Samie, AIA	ajc architects
Joshua W. Greene	ajc architects
Jeff Miller	Reaveley Engineers & Associates (Structural)
Win Packer	WHW Engineering, Inc. (Mechanical & Plumbing)
Dave Wesemann	Spectrum Engineers (Electrical & Technology Systems)

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Executive Summary 01

Executive Summary

Project History and Justification

Health care delivery and related higher education have experienced unprecedented growth and change over the past decade. The evolution of information exchange technology and simulation-based learning, as well as changes in the global marketplace and increased population diversity, call for a dynamic approach to preparing the next generation of nurses and health care professionals.

The College of Nursing at the University of Utah is no exception, experiencing growth and change in all the missions of the University: education, research practice and service. Fortunately, previous efforts, at the master planning level as well as the strategic planning level, have positioned the College of Nursing to be ready for the growth and change, as well as an international leader in research and education for nursing and health care.

In order to advance this position, the College of Nursing has made significant investments in research and research infrastructure that have already yielded steady growth in extramural research funding. Recent recruitment of tenure-track faculty with promising research programs attest to this fact. Further evidence is a recent increase in NIH ranking for research funding among schools of nursing nation-wide.

Furthermore, the College of Nursing has embraced technologies for distance-learning formats to maximize its reach, not only to rural areas in Utah, but to students, faculty and practitioners around the globe. The College of Nursing leads the University in programs and courses that utilize distance technology in web-based programs (RN to BS, Gerontology Certificate program, Teaching in Nursing MS and Certificate, Rural NP program) and teleconferencing (PhD in Oncology Nursing).

The College of Nursing's 2007-2010 Strategic Plan captures their vision and goals, as well as challenges they are anticipating:

- The student body will increase in diversity, will come from all over the world, will be multicultural, multilingual, and will possess widely-varied learning styles and social skills.

- Students will prefer hands-on patient simulation and customizable, self-directed learning over traditional lecture and a non-linear, recursive curriculum.

- Students and faculty will see their educations as a process, engaging in life-long learning. They will demonstrate process-based competencies tied to emergent global models, partnering with colleagues across disciplines.

- Faculty will balance technological advancements with the core concepts of relationship-based care and the principles of health and wellness through mentoring and role modeling.

- The College of Nursing will be widely recognized for its pioneering interdisciplinary collaboration. It will redefine the "art of nursing" - collaborating with expert clinicians and researchers, coaching patients in self-management and embracing alternative approaches to care.

While the Strategic Plan provides vision and direction for the College of Nursing, its facilities stand in stark contrast to the vision and the program itself.

During Master Planning (2005) it was determined that the College of Nursing should stay in the existing location since it is in close proximity of Hospitals and is adjacent to related Health Sciences buildings (See Section 2 for details). However, the existing College of Nursing Building (originally built in 1968) is at capacity, and is substandard in terms of functional and energy efficiency, utility infrastructure, and current life safety and building code compliance.

The structural system for the entire building does not meet minimum requirements to resist lateral forces such as earthquakes (seismic forces). Fire suppression systems and alarm devices are inadequate and inconsistent throughout the building. The existing stairs do not meet current code requirements for common use, and are even more deficient with respect to emergency egress. Hazardous materials, such as asbestos in the original architectural finishes, present a health risk. Additionally, elevators, mechanical (HVAC) and plumbing equipment, telecommunications and data equipment, and electrical systems and equipment are beyond their life expectancy in most cases and need to be completely replaced.

Ad hoc remodels over the past 40 years have resulted in space layouts unsuited to current and future needs, and inconsistent architectural finishes and lighting strategies. Shared areas such as student lounges, meeting rooms, copy / fax / work rooms, and break rooms are limited. Faculty offices are of inconsistent size and quality, and are scattered on several levels of the building, thus reducing operational efficiency. The existing simulation lab is undersized and obsolete. The existing lab does not have the infrastructure or the space for state-of-the-art patient simulation. Also, the existing simulation lab lacks storage space.

Relatively recent remodels to the majority of the existing classrooms and existing auditorium have improved the educational environment, but still lack the technology to maximize all formats of teaching/learning. A recent remodel of the west side research office suite provided much needed improvement to the research environment, but due to budget constraints, did not include any building systems upgrades.

In addition to obsolete mechanical systems, the existing windows are evidence of the building's lack of energy efficiency. The existing single-pane glazing does not provide an adequate thermal barrier to the fluctuating temperatures outside of the building.

Lastly, existing restroom fixtures are inadequately distributed among men and women, and are inconsistently located on various floors throughout the building. Additionally, the existing restrooms do not meet ADA accessibility standards.

Given the existing conditions, it has become imperative to significantly renovate and upgrade the existing facility and its infrastructure in order to align the facility with life-safety and code requirements and the vision and strategic planning goals (see Section 4 for details).

Planning for the Future

In December of 2007, The State of Utah Department of Facilities Construction and Management contracted ajc architects to work with the University of Utah and the College of Nursing to create this Program Document for the renovation to the existing College of Nursing Building. ajc was tasked to: interview users, summarize the program of spaces and document the users' related requirements and adjacencies; analyze the existing building and its systems; provide a preliminary construction cost estimate; provide costs for comparable projects; and provide test-fit floor plans for verification of the program.

A project vision was defined by the Working Committee at the initial kick-off meeting, which included the points listed below:

- Accommodate current and future growth of the College of Nursing.

- Improve adjacencies and operational efficiencies of Faculty and Research offices (in conjunction with shared work and break rooms).

- Program a state-of-the-art simulation learning center. This Center will be a state-of-the-art core facility for the University, not only for the Health Sciences campus, but for the State as well.

- Upgrade infrastructure and systems.

- Provide an asbestos-free building and working environment.

During the interview process, ajc met with representatives from the following departments and groups: The Dean's Office and Administration; Academic Affairs and Student Services; Research; Acute and Chronic Care Division; Health Systems / Community Based Care Division; Faculty Practice; Simulation Learning Center, Information Technology; Undergraduate Students: Graduate Students; and Doctoral Students.

Guided by the vision and the interviews, ajc and the Working Committee developed program scenarios that accommodated each of these groups to the extent allowable by the existing building and legislative approval.

Building Program Summary (see Section 5 for details)

	Level	Preferred Stacking / Adjacency	Existing GSF Available	Programmed NSF / GSF*
	1	Simulation Learning Center	7,565	11,536 / 16,995**
	2	Classrooms, Student Spaces, Student Services	17,300	11,875 / 17,463
	3	HSCBC, Faculty Practice, and IT	17,300	12,010 / 17,662
	4	Administration and Acute and Chronic Care	17,300	11,405 / 16,772
	5	Research	18,700	12,740 / 18,735
TOTAL***			77,461	59,566 / 87,597**

* Gross Square-Footage includes 68% efficiency factor.

** Figure includes approximately 9,430 GSF of space captured from existing Level 1 covered parking area.

*** Additional space not included in the levels above: Lower Parking Level - Storage and Receiving (350 GSF), and additional mechanical rooms and electrical rooms (1,900 GSF) and Mechanical Sub-basement (4,550 GSF)

The summary indicates that the College of Nursing program (at 87,597 GSF) is in line with the available existing space (87,300 GSF). This figure includes approximately 9,430 GSF of new additional space on Level 1 (captured from the existing covered parking area) as suggested in the Master Plan and approved by the Legislature.

The summary also illustrates the preferred stacking / adjacency scenario for the renovated building: Level 1 = Simulation Learning Center; Level 2 = Classrooms, Student Spaces, and Student Services; Level 3 = Offices and shared work and meeting spaces for the Health Systems/Community Based Care Division, Faculty Practice, and IT; Level 4 = Offices and shared work and meeting spaces for the Acute and Chronic Care Division, and the Dean's Office and Administration; Level 5 = Offices and shared work and meeting spaces for Research.

The preferred program scenario assumes that all but one of the existing classrooms and the auditorium on Level 2 will remain as is (with only minor renovation for new seismic bracing and light fixtures and some upgrades to include distance-learning technology). The space currently occupied by the existing classroom (Room 205) will be reprogrammed as it is under-utilized and obsolete. The program also assumes that the recently remodeled Research office suite on the west side of Level 5 will remain as is (with only minor renovations for new seismic bracing and new circulation space for the new core layout). The existing mechanical and electrical rooms in the sub-basement and on the lower parking level will be reused.

The program accounts for current needs as well as foreseeable growth. (83) private offices are needed to meet current requirements, and an additional (32) private offices are included for future growth. Similarly, (16) work stations are needed to meet current requirements, and an additional (4) are included for future growth. (4) 2-person shared offices are needed for current requirements, and an additional (4) are included for future growth. (6) 4-person shared offices are required for current needs, and an additional (2) are included for future growth.

Other spaces and amenities considered that were already provided in the recently constructed Health Sciences Education Building (HSEB) were eliminated from the program to minimize redundancy. See the appendix for additional spaces considered, but not included in the final program.

The scope of this Program Document does not include relocating parking stalls lost to the new additional space captured on Levels 1 or the Lower Parking Level.

Building Renovation Cost Summary

The construction budget for the proposed renovation to the College of Nursing Building is $11,865,859 ("hard costs" only). The current cost estimate for the proposed program (87,597 GSF) is $15,966,675. This estimate affords $182 per square-foot which is in line with construction costs for comparable projects (see Section 6 for comparable project cost information). This estimate includes both remodel and related site work, as well as premiums to meet DFCM's High Performance Building Rating System and LEED Silver certification requirements. An add option for LEED Gold certification and related design requirements is indicated on the estimate - 5.0% ($798,334) . Costs are based on a construction start date of June 2009. See Section 6 for the detailed estimate. Removal of hazardous materials is not included in this cost estimate.

While the current cost estimate indicates that the building is in line with construction costs for comparable projects, the estimate is over available funds. During Programming, a Value Engineering Session was held to review and discuss possible cost saving options for the project - see the summary on the following page, and Section 6 for details. At this time, it is expected that additional funds will need to be provided in order to align the construction costs within available funds. Accurate cost modeling will continue to be required throughout subsequent design phases.

Proposed Renovation Cost Model Line Items

Architectural	$ 4,509,976*
Structural	$ 1,253,728*
Mechanical	$ 3,508,300*
Electrical	$ 2,025,050*
Site work	$ 273,000*
SUBTOTAL*	$11,570,054*

* Cost before mark-ups: General Conditions (10.0%), Bonding (1.0%), Overhead and Profit (7.0%), Design Contingency (10.0%), and Inflation to Bid Date (10.0%) - See Section 6 for mark-up details.

TOTAL RENOVATION COST (including mark-ups)	$15,966,675 (hard costs only)

Summary of Value Engineering Options

During the Programming Phase, a Value Engineering Session was held to review and discuss possible cost saving options for the project as it moves into design. The following items are being considered for cost savings, and are anticipated to adjust the total construction cost as follows:

Architectural Item #1:	$	450,000
Mechanical Item #1:	$	135,000
Mechanical Item #2:	$	150,000
Mechanical Item #6:	$	25,000
Possible Cost Savings:	**$**	**760,000**

Construction Estimate:	$15,996,675
Less possible VE Items:	$ -760,000
	$15,236,675

See Section 6 for detailed descriptions of each of the items listed above.

Project Schedule

The proposed schedule for the College of Nursing Building Renovation project is as follows:

Selection of CM/GC & AE	July 2008
Schematic Design	August 2008
College of Nursing Relocation	January 2009
Asbestos Abatement	January 2009
Start of Construction	June 2009
Construction Substantial Completion	June 2010
Occupancy	August 2010

See Appendix F for a detailed As-Proposed Timeline prepared by DFCM.

Site Analysis 02

Site Analysis

This site analysis is provided to describe the existing site conditions and site work required to support the renovation to the existing College of Nursing Building described in this Program Document in order to identify the effects of the site on the project cost, and project schedule (see Sections 3, 4, and 5 for Existing Condition Summary, Building Requirements, and Individual Space Outline respectively). In general, site work proposed at this programmatic level is minimal and primarily related to mechanical and electrical utilities. No major architectural site work or landscaping is proposed at this time. However, this site analysis information is conceptual in nature, and should serve as a foundation for a more detailed site analysis in subsequent design phases. The diagrams and images included at the end of this section illustrate the existing conditions and work described in the text below.

Location

The existing College of Nursing Building is ideally located for its purposes in the heart of the University of Utah Health Sciences Campus. General boundaries consist of North Campus Drive to the north, 1900 East/Medical Drive South to the west, Fort Douglas to the south, and the foothills of the Wasatch Front Mountain Range to the east. The College of Nursing Building is located north of the Pharmacy Building, and south of the University Hospital, Primary Children's Medical Center, and the School of Medicine. The recently constructed Health Sciences Education Building (HSEB) is directly east of the Nursing Building.

HSEB provides academic space for the Health Sciences campus, including classroom space, student study spaces, and a cafe. This interdisciplinary facility provides spaces that bring Health Sciences faculty and students together in one centrally located place. Some teaching functions currently residing in the College of Nursing Building will be relocated into the neighboring HSEB.

While other spaces for future building have been identified on the Health Sciences campus, the College of Nursing Master Plan (ajc architects, 2005) confirmed that there is no compelling advantage to relocate the College of Nursing. The existing site is consistent with the goals of the Campus Master Plan for the College of Nursing to remain in its current location.

The site offers spectacular views of the Salt Lake Valley to the west and south. Views to the north are of the clinical care elements of the Health Sciences Campus and the foothills beyond. While glimpses of the mountains to the east are possible from the upper levels of the College of Nursing Building, HSEB blocks most of this view.

Site Functions and Relationships

The primary vehicle access to the College of Nursing Building is via Mario Capecchi Drive. UTA bus, campus shuttles, and TRAX serve the Health Sciences Campus. The Campus Master Plan for the University of Utah is to provide peripheral parking with shuttle service throughout the interior of campus. Access to the lower level parking is from 1900 East (on the west side of the building). There is a parking lot directly north of the building and under the north half of the building on Level 1.

Pedestrians coming to/from main campus cross over Mario Capecchi Drive via the Legacy Bridge, which connects to a wide sidewalk directly east of the College of Nursing Building. This sidewalk is the major pedestrian access, and serves students walking to and from student housing and those using the existing shuttle stop to the south. Students, staff, and visitors arriving by automobile generally park in a parking structure to the east of the HSEB building and filter through the Health Sciences Campus to the main entry on the east side of the College of Nursing Building. This path has a significant grade change. The approach to the building from the TRAX stop to the west leads people through the buildings and skywalks west and north of the College of Nursing Building. Here, there is also significant grade change. Access from the north is primarily from the Hospital, via the School of Medicine Building, to the College of Nursing Building's main east entrance. It is crucial to maintain the east entrance as it connects the College of Nursing Building to the Hospital, to HSEB and to the parking structure.

While the north entrance does serve the limited number of people able to park in the north parking lot, this is primarily the service entrance to the building. This access will need to be reconsidered as the program proposes locating the high-security Simulation Learning Center on Level 1, and thus minimizes the opportunity for general access to the building from this level.

The south entrance to the building on Level 1 is not heavily used as it provides little connectivity to campus pathways, parking, and related facilities. It is primarily used by the clinical education functions and staff located on Level 1. As these functions will be relocated to the upper levels of the building, and the Simulation Learning Center will require a high level of security, the use of this entrance will continue to be minimal.

An under-utilized plaza exists on the west side of the building. There is no existing access to the building from the west side. Currently, the program does not include any functions that will increase the utilization of the plaza. However, with some creativity, and the proper approvals, this space could be connected via an exterior stairway to the student spaces on Level 2 in order to “activate” this outdoor space. This relationship should be studied further in subsequent phases of design.

Code and Easement Restrictions

Fire truck access must be maintained along the sidewalk running directly east of the building. As all new construction will be within the footprint of the existing building, there are no other code or easement restrictions that have been identified for the existing College of Nursing Building site.

Geotechnical Considerations

The College of Nursing is located within the Wasatch Fault Zone and is located quite close to the fault. Geologic seismic hazard mapping indicates that this site could experience severe lateral ground shaking. However, no geotechnical report is available for the College of Nursing Building at this time. A final geotechnical report must be completed prior to subsequent design phases in order to establish proper design criteria for new foundations that may need to be added for the additional seismic bracing required. Some issues that will need to be addressed include, but are not limited to: Soil bearing capacity, structural fill requirements, potential differential settlements, etc. See Structural Design Criteria in Section 4 for additional information.

Topographic Survey

A broad-scale contour map was provided by the University, and is included in this section for reference only. The contour map indicates a drop of approximately 14 feet from the main entrance on the east side of Level 2 to the plaza on the west side of Level 1. This allows for a significant amount of natural daylight on the north, west, and south sides of Level 1. However, a detailed topographic survey is not available at this time. It is assumed that the topography for this site will not be significantly impacted as all new construction will be within the footprint of the existing building.

Existing Utilities

See the Existing Utilities Plan included in this section for reference of the following items:

Water: A 16” ductle iron water line runs from north to south on the west side of the College of Nursing Building, under 1900 east.

Chilled Water: A 12” chilled water line is located on the east side of the College of Nursing Building, where it connects to the building on the southeast corner.

High Temp. Water: 3”, 6”, and 10” high temperature water lines run essentially west to east between the College of Nursing Building and the Pharmacy Building, where it connects to the building on the south side. The lines run north and south along the east side of the building, then continue to the east on the north side of HSEB.

An abandoned high temperature water line exists on the west side of the building.

Sanitary Sewer: The sanitary sewer lines run from the east on the north side of HSEB, then continue north and south along the east side of the College of Nursing Building. The line continues to runs east to west between the College of Nursing Building and the Pharmacy Building.

Storm Drain: 15” storm drain lines run both the east and west sides of the College of Nursing Building. On the east side, the line runs along the north side of HSEB, then continues to the south along the east side of the College of Nursing Building. On the west side, the line runs east to west towards 1900 east.

Communication: (12) 5” conduits for communication lines run west to east between the College of Nursing building and the Pharmacy building. These lines continue on both the east and the west side of the building.

High Voltage Electrical: A high voltage electrical line runs north to south along 1900 East, and connects to the College of Nursing Building on the southwest corner.

Proposed Utility Upgrades/Modifications

Water: Replace the existing 4” domestic water main to the building. Underground water service piping shall be type K wrapped copper and enter the building into a pressure reducing station and main building shut-off valve.

Fire riser shall be a new feed to the building and shall be tied into the existing fire line at building exterior.

Sewer: Provide a new 6” sewer main and tie into the existing 6” line adjacent to the building. Design team shall verify that the 6” line has the capacity to handle the new remodel of the College of Nursing building. Sewer piping shall be cast iron. No-hub piping is not allowed underground. Provide cleanouts as required by code.

Storm Drainage: Building roof drain piping shall surface drain. Roof drain piping inside the building shall be insulated. Primary and secondary roof drain system shall be provided. Roof drains shall be tied into campus storm drain system.

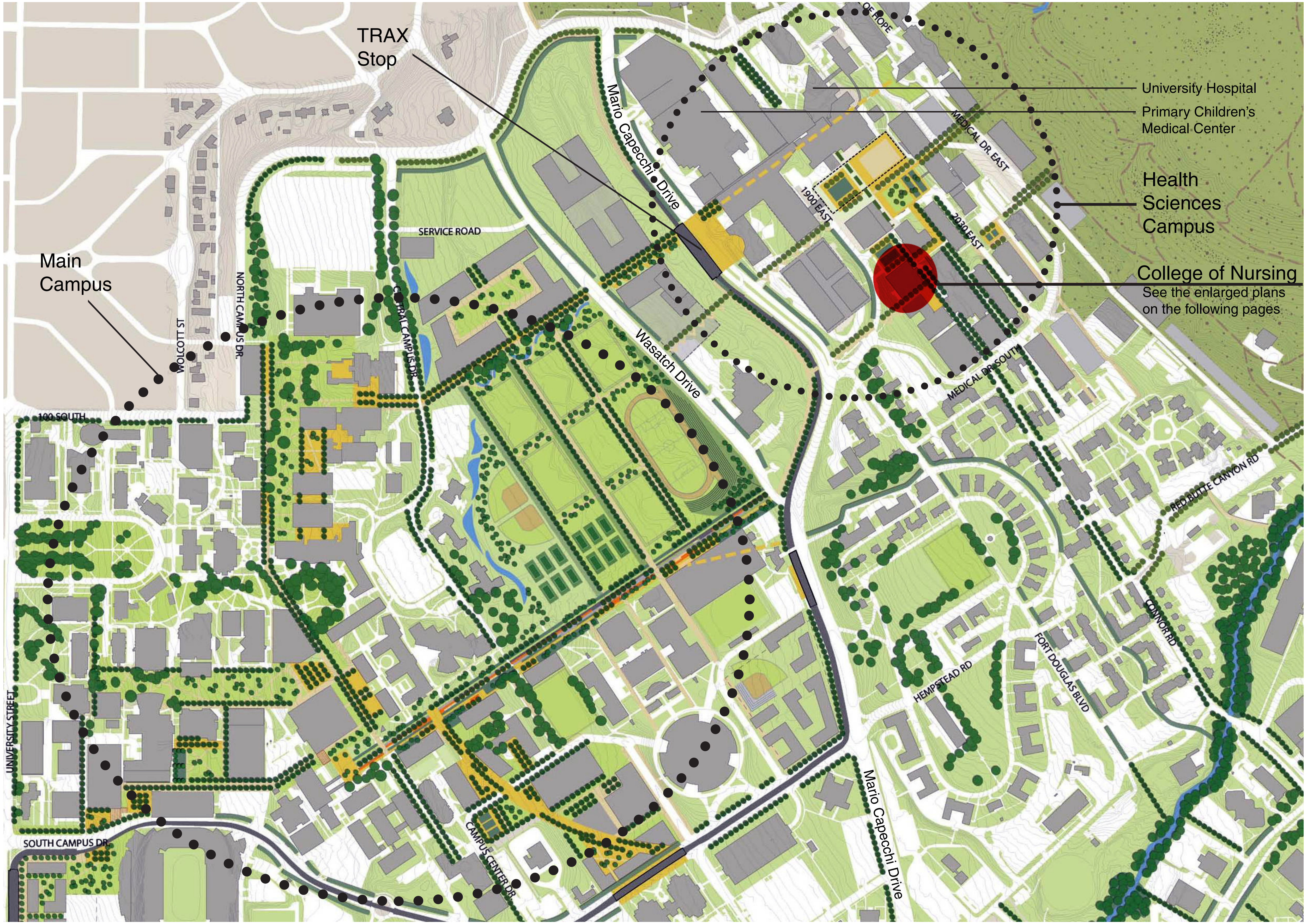
Electrical Distribution: Deliver primary electrical service to the building from the campus 12,470 V distribution system. Abandon and remove the old 7,200 V service to the building and provide new 12,470 V service from an adjacent manhole that was installed from the Red Butte substation to the Health Science Education building located southeast of the Nursing Building. Provide a new 4-way switch in manhole to connect to existing feed to the HSEB and new feed to the Nursing Building. Provide new transformers and VFI switch in a new transformer vault for the Nursing Building.

Communication: Provide (4) new 4” duct banks into the building from an existing telecommunications manhole located to the southeast of the building. The existing 2” conduit duct bank can be left in place and used to the extent possible.

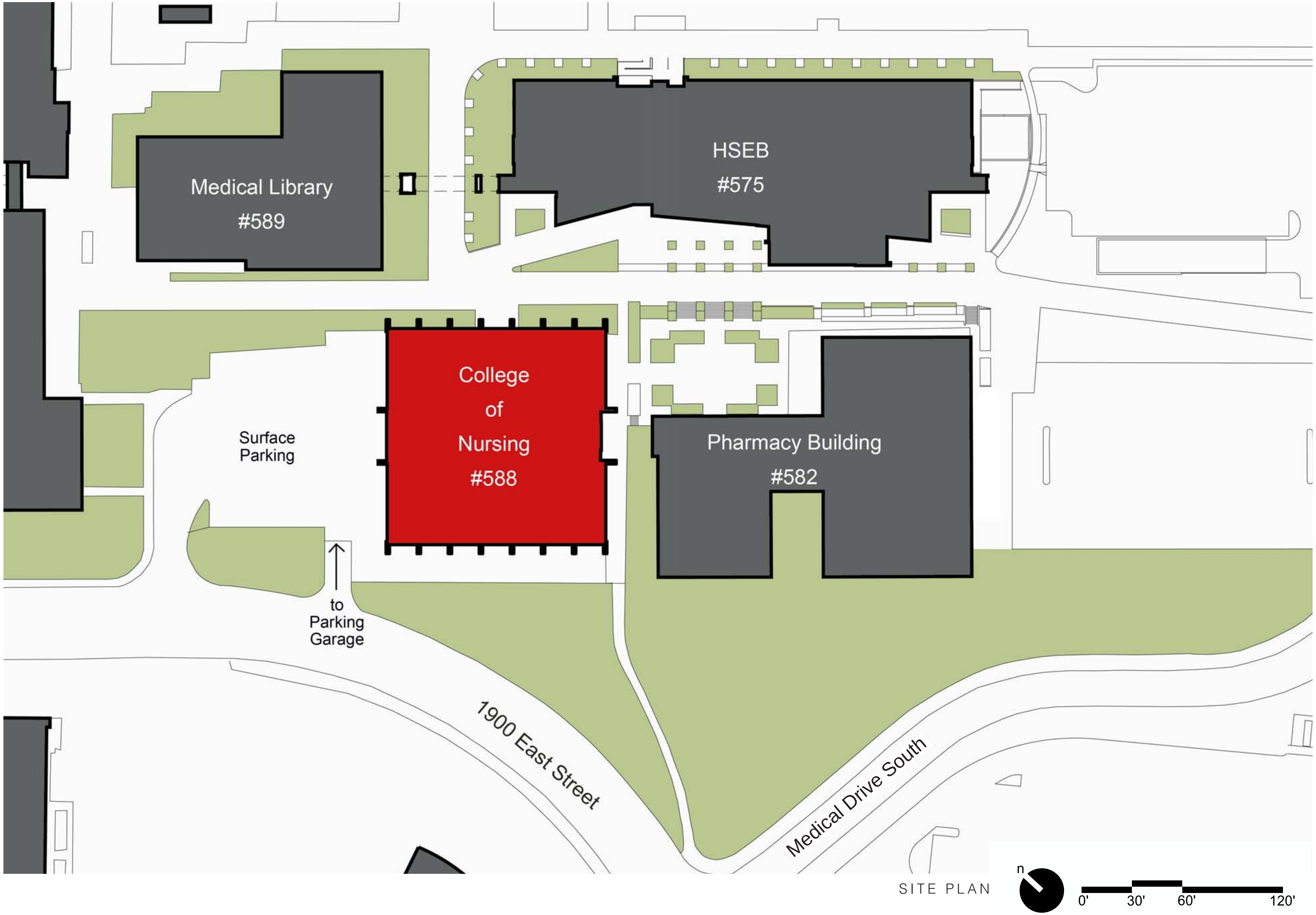
See the Mechanical and Plumbing, and Electrical Design Criteria in Section 4 for additional information.

Independent Testing and Surveying

DFCM shall be responsible for testing and surveying. DFCM shall contract for geologic survey, soil investigation, surface contours, and any other surveys as required. These surveys are not included in the Program Document, and are to be provided, as required, prior to subsequent design phases.



OVERALL CAMPUS PLAN


Medical Library
#589
HSEB
#575
College
of
Nursing
#588
Surface
Parking
Pharmacy Building
#582
to
Parking
Garage
1900 East Street
Medical Drive South
n
0'
30'
60'
120'

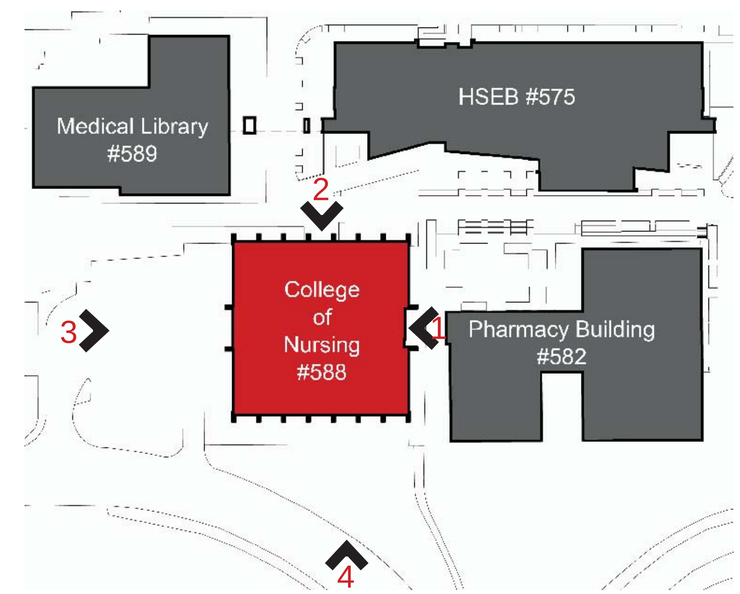
SITE PLAN

1 south entry

2 east entry

3 north elevation

4 west elevation



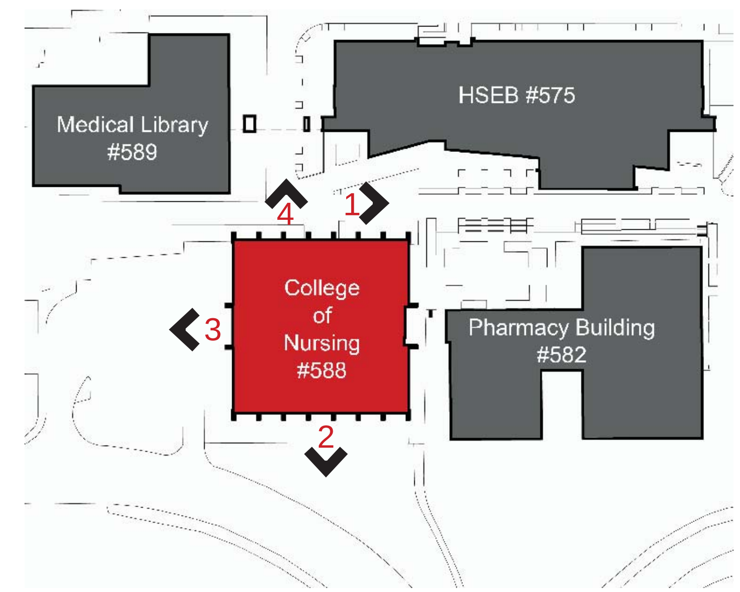
views into the site

1 looking south

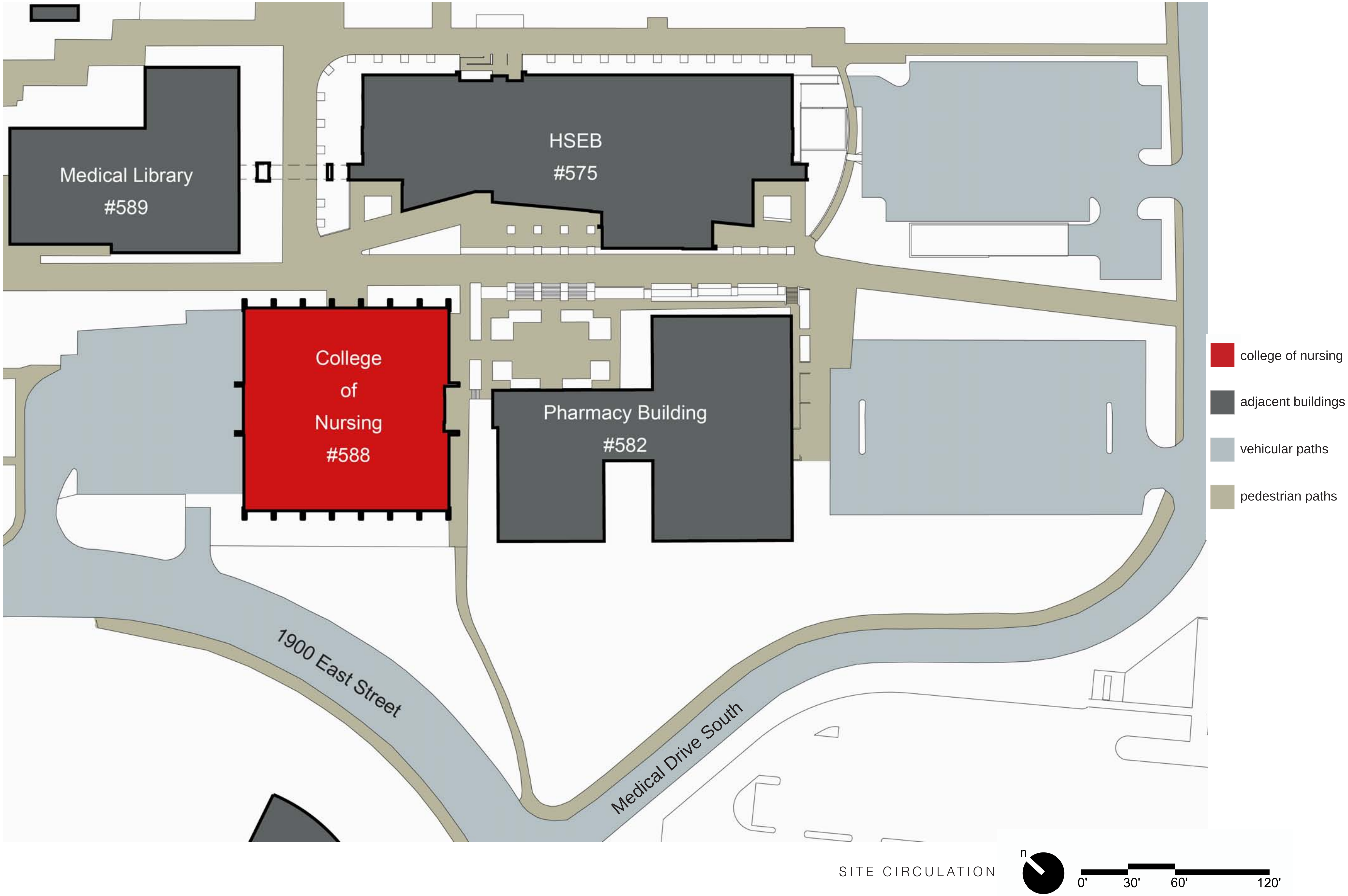
2 looking west

3 looking north

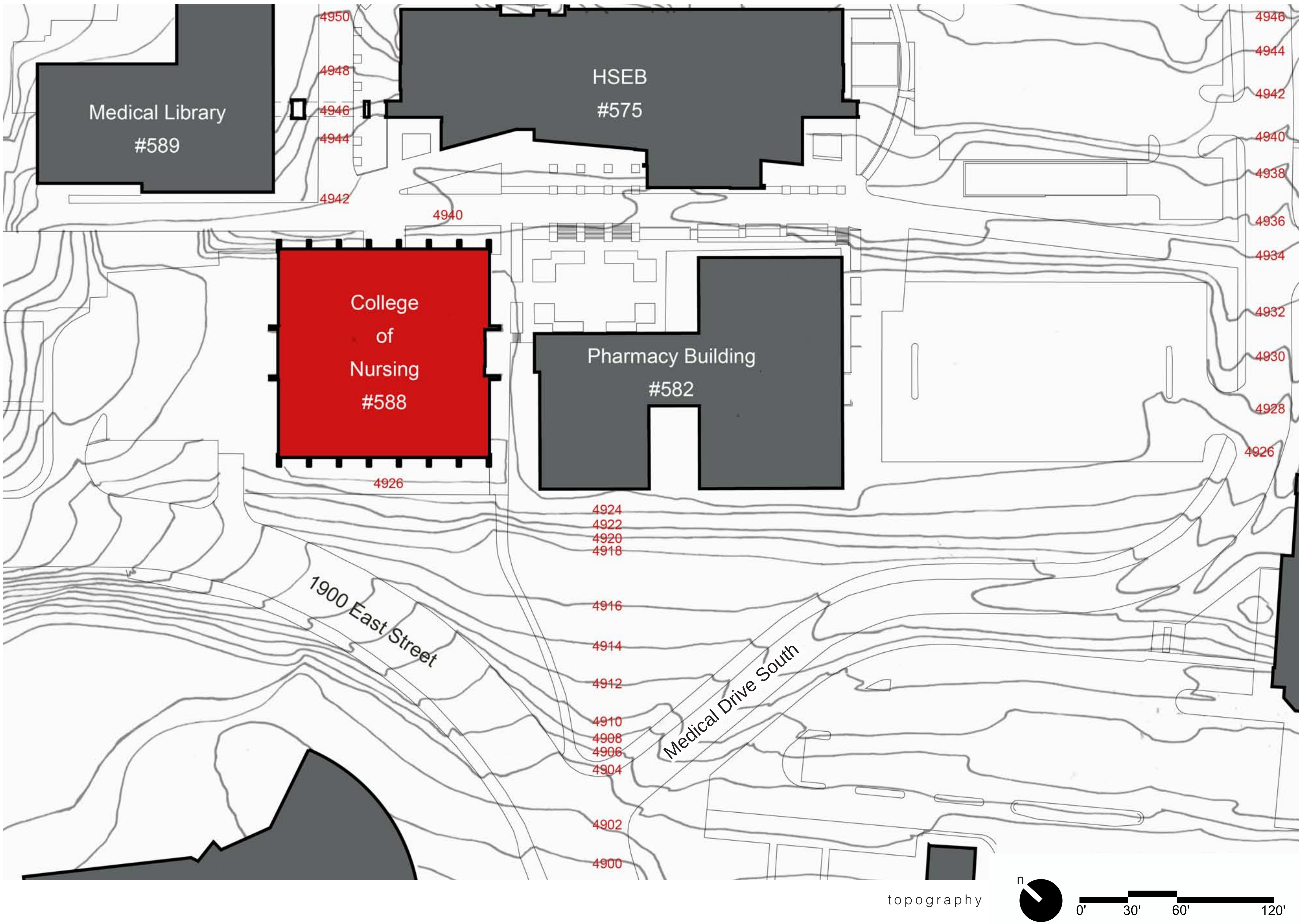
4 looking east



views from the site



SITE CIRCULATION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1900 East Street
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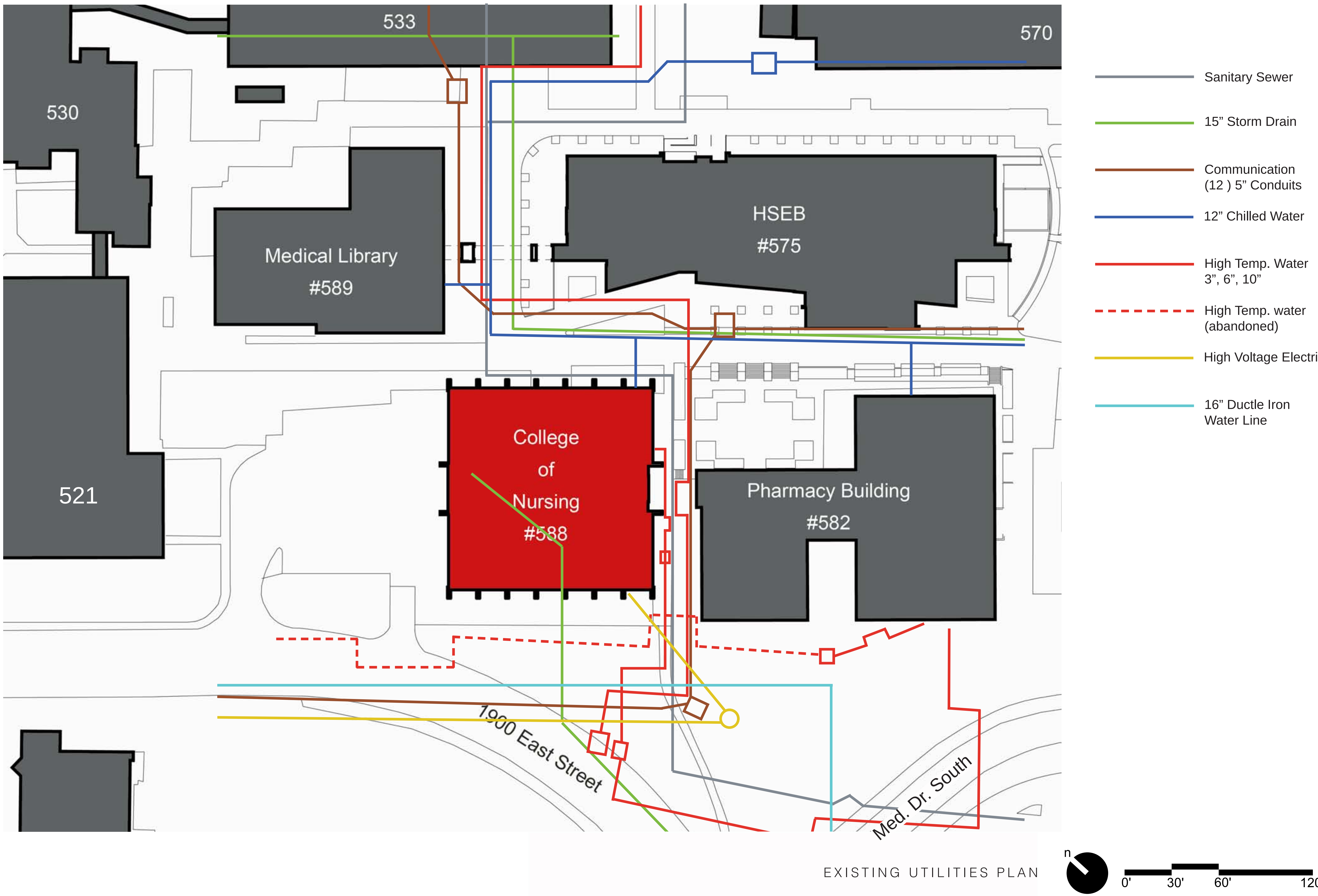
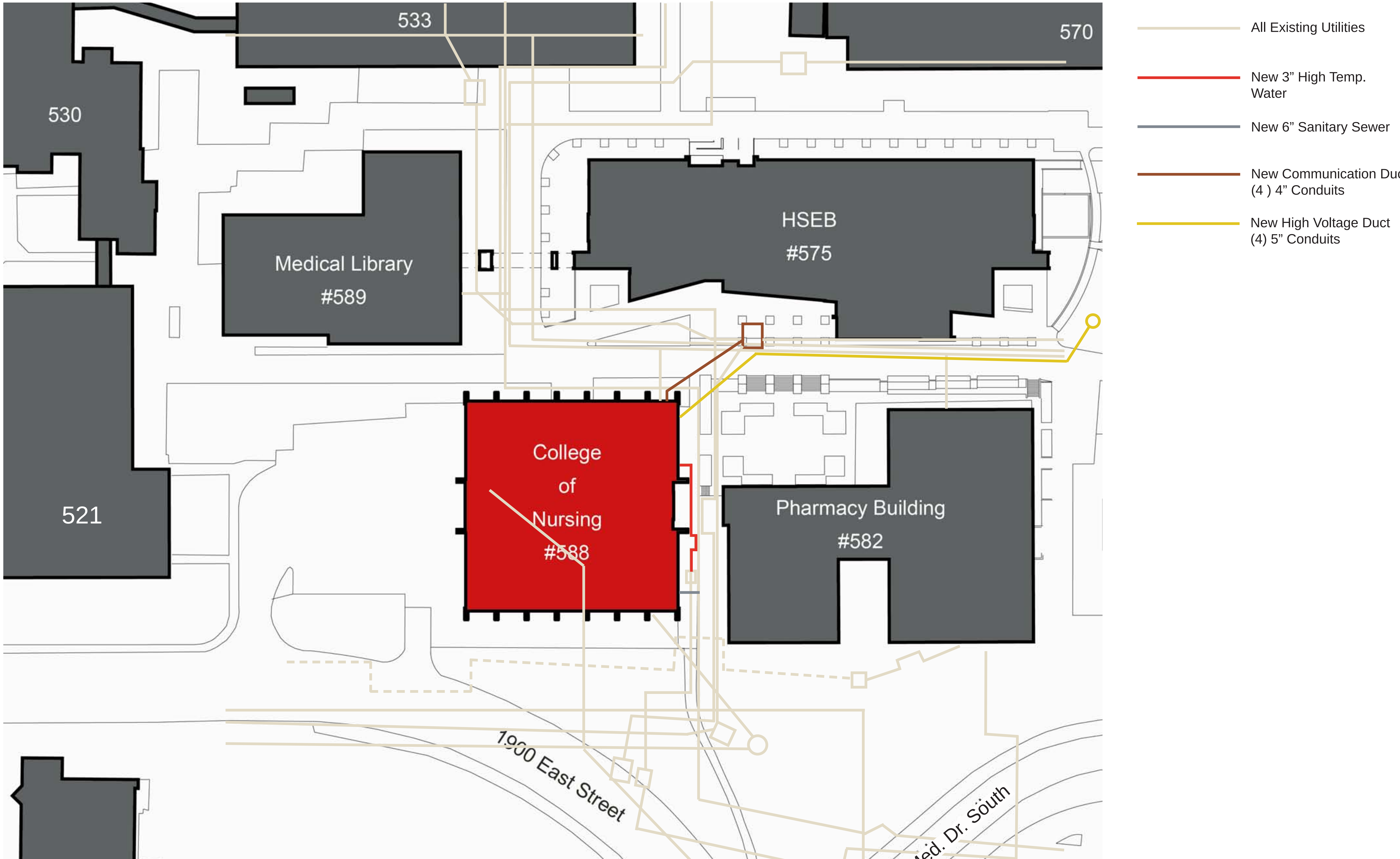
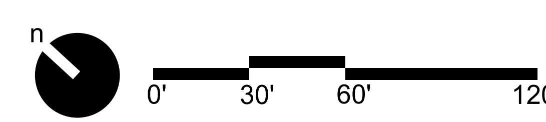
topography



EXISTING UTILITIES PLAN



PROPOSED UTILITIES PLAN



Existing Conditions Summary 03

Existing Conditions Summary

The existing College of Nursing Building (originally built in 1968) has been well maintained for over 40 years, but is now at capacity, and is substandard in terms of operational and energy efficiency, utility infrastructure, and current life safety and building code compliance. The text below and the plans/images on the following pages illustrate the existing conditions of the building.

Architectural:
The brick masonry exterior of the building is in good condition. Modifications to the brick should be limited to areas impacted by structural upgrades for seismic bracing. Similarly, the existing roof membrane is in good condition and is still under warranty. See Section 4 for details.

The Existing Space Utilization plans included in this section illustrate that ad hoc remodels over the past 40 years have resulted in space layouts unsuited to current and future needs, and inconsistent architectural finishes and lighting strategies. Shared areas such as student lounges, meeting rooms, copy/fax/work rooms, and break rooms are limited. Faculty offices are of inconsistent size and quality, and are scattered on several levels of the building, thus reducing operational efficiency.

The existing simulation lab (included in the original 1969 construction) is used by almost 30 faculty members, yet it is only in use 80% of its open hours. It is poorly laid out for current teaching methods, and is undersized and obsolete. Last remodeled in 1992, it currently occupies 4,600 square-feet. The existing simulation lab does not have the infrastructure or the space for state-of-the-art patient simulation. Also, the existing simulation lab lacks storage space.

Relatively recent remodels to the majority of the existing classrooms and existing auditorium have improved the educational environment, but still lack the technology to maximize all formats of teaching/learning. Similarly, a remodel of the west side 5th floor Research Office suite provided much needed improvement to the research environment, but due to budget constraints, did not include any building systems upgrades.

In addition to obsolete mechanical systems, the existing windows are evidence of the building's lack of energy efficiency. The existing single-pane glazing does not provide an adequate thermal barrier to the fluctuating temperatures outside of the building. The Program proposed to replace the windows. See Section 4 for details.

There is an existing problem with box elder bug infiltration. Areas of the building, including the envelope, will need to have any cracks, holes, and gaps carefully sealed in order to address this issue.

Lastly, existing restroom fixtures are inadequately distributed among men and women, and are inconsistently located on various floors throughout the building. Additionally, the existing restrooms do not meet ADA accessibility standards.

Structure:
The College of Nursing Building's steel framed structure is supported on concrete columns at the parking level. The seismic force-resisting system consists of reinforced masonry shear piers at exterior, and steel moment frames in the orthogonal direction. Reinforced concrete shaft walls at stair and elevator towers also function as shear walls.

The structural system was designed and built prior to the knowledge of Northern Utah's high risk for earthquakes. In a Seismic Evaluation Report (Reaveley Engineers) it was determined that the building does not have the inherent characteristics to perform well during a significant earthquake. The structure does not meet current code requirements to resist lateral forces such as earthquakes (seismic forces). A copy of the seismic report is included in Appendix B. The structural system requires seismic bracing retrofit. See the Structural Design Criteria in Section 4 and the Seismic Evaluation Report in the Appendices for detailed information.

Fire Suppression:
Though the existing fire suppression systems and alarm devices have been upgraded at various times over the life of the building, they have been determined to be inadequate in many cases and are inconsistent throughout the building. The program assumes that the fire suppression system will be upgraded to meet current code, campus, and fire marshal rules and regulations - see Section 4 for detailed information.

Stairways:
There are two existing stairways in the north - south core of the building. Neither of the existing stairways meet current code requirements for emergency egress. Doors to the stairways do not have smoke gaskets. Risers, treads, and handrails have gaps greater than 4", which does not meet IBC requirements. Existing risers are open and have gaps over 5", and existing landings have gaps over 7" which does not meet IBC requirements. Existing stair landing widths are 43 1/2", which is less than the minimum width required by the IBC (related to the width of the treads, 48 1/2" in this case). None of the handrails are continuous as is required by the IBC.

Hazardous Materials:
It has been determined that several asbestos containing materials (including ceiling tiles, floor tiles, structural fire-proofing, fire doors, pipe insulation, and various adhesives/compounds) are present building-wide. As asbestos is a hazardous material, these items will need to be completely removed from the building in order to provide a healthy working environment. See the Asbestos Survey and Assessment (IHI Environmental, April 17, 2008) in Appendix C for detailed information.

Elevators:
The original Westinghouse elevators are still operating in the building. As the building is over 40 years old, this is well beyond the average 25-30 year life-expectancy of a typical elevator. It has been determined reliability of the elevators is substandard and elevators' safety is questionable. The elevators do not have fire service (no way of knowing to let

passengers out in the event of a fire). Additionally, the current system may not maintain the elevator car doors in a closed position during a high speed stop. Modernization of the elevators will significantly improve these life-safety issues as well as energy efficiency. The Program Document proposes to replace the elevator systems entirely. See the elevator report (ThyssenKrupp Elevator, April 29, 2008) included in the Appendix D.

Mechanical (HVAC) and plumbing equipment, electrical systems, telecommunications systems and equipment are original in most cases, and are well beyond their life expectancy, and need to be completely replaced.

The College of Nursing Building is currently heated by high temperature water from a central plant. High temperature water is routed to the original shell and tube hot water converter located in the mechanical sub-basement. It is well beyond its 24 year life expectancy. The main hot water distribution pumps, compression tank, and coil circulating pumps are also beyond their life expectancy. Cooling for the building is currently provided by one original water cooled chiller in the mechanical sub-basement, and is supplied by a central plant. The chiller, cooling tower are in poor condition. The pumps and the air handler are well beyond ASHRAE's recommended service of life. Conditioned and fresh air is distributed to the building by one air handling unit located in the mechanical sub-basement. Fresh air is introduced to the building via a fresh air well and louver on the east side of the building. Air is relieved through a relief air louver and well at the south side of the building. These systems are beyond ASHRAE's recommended service of life.

It is anticipated that new heating, cooling and ventilation systems will significantly improve the energy efficiency of the building. See the Mechanical Design Criteria in Section 4 for detailed information.

Existing plumbing systems, including water heater, water distribution systems, plumbing fixtures, and piping are in fair to poor condition building-wide, and are beyond their life expectancy. Plumbing fixtures, including lavatories, water closets, and drinking fountains do not consistently meet ADA requirements. See Plumbing Systems Design Criteria in Section 4 for proposed upgrades.

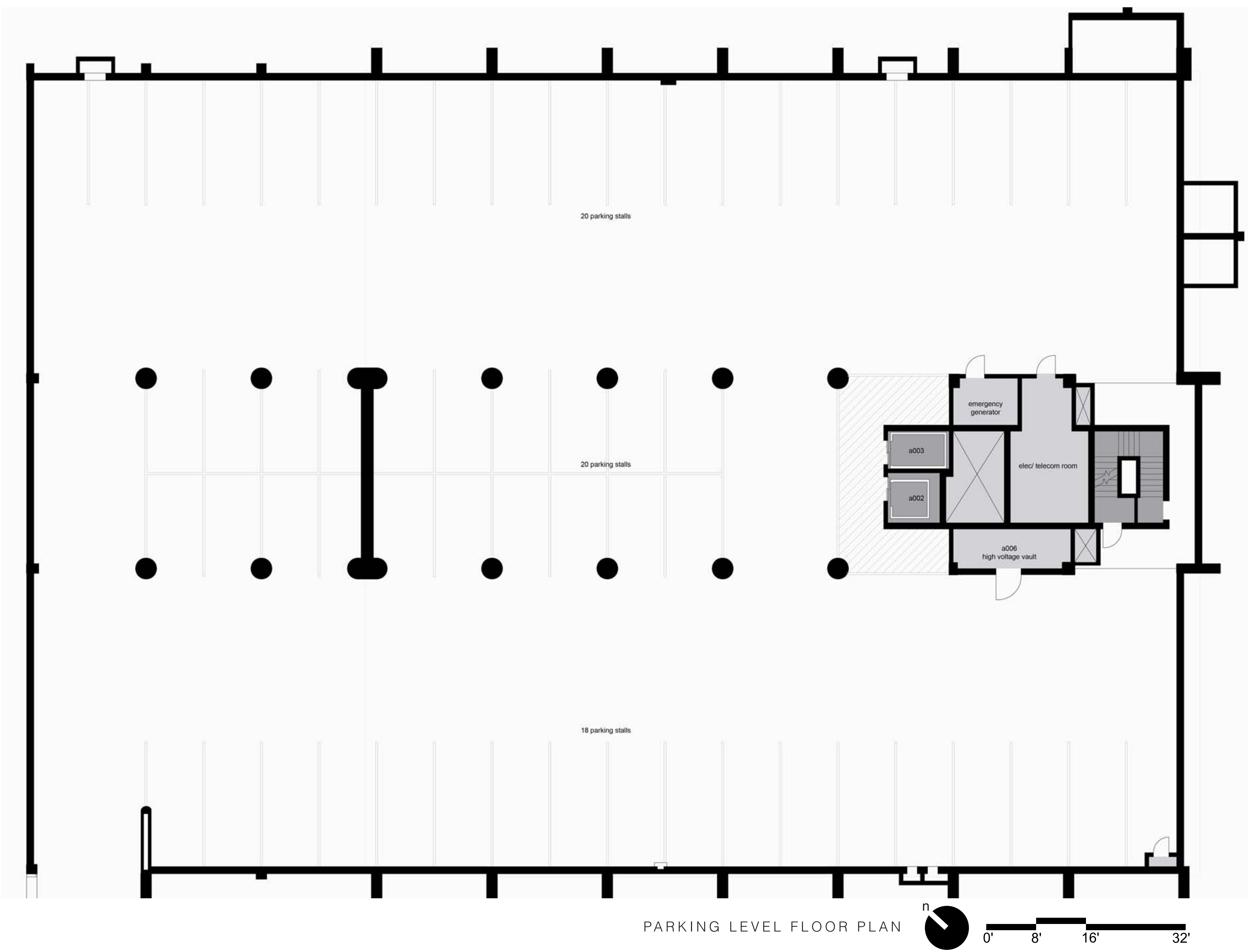
Existing electrical transformers show signs of leakage and need to be replaced. The vault does not provide adequate working clearances. The main low-voltage gear is original and is obsolete and needs to be replaced. Existing panelboards and conduit are original equipment, have little room to add to, and are obsolete. A small 30kW diesel generator is located indoors on the lower parking level. Emergency lighting in the building is inadequate to meet the current minimum code requirements. The generator is not sized for new loads required for adequate emergency power and lighting. See Electrical Systems Design Criteria in Section 4 for detailed information regarding related upgrades and replacements.

Existing telecommunication systems are served with 2" conduits. The current campus standard is 4" conduits. These systems are proposed to be upgraded during the renovation. See Electrical Systems Design Criteria in Section 4 for detailed information.

Given the existing conditions, it has become imperative to significantly renovate and upgrade the existing facility and its infrastructure in order to align the facility with life-safety and code requirements and the vision and strategic planning goals (see Section 4 for details).

MECHANICAL LEVEL FLOOR PLAN

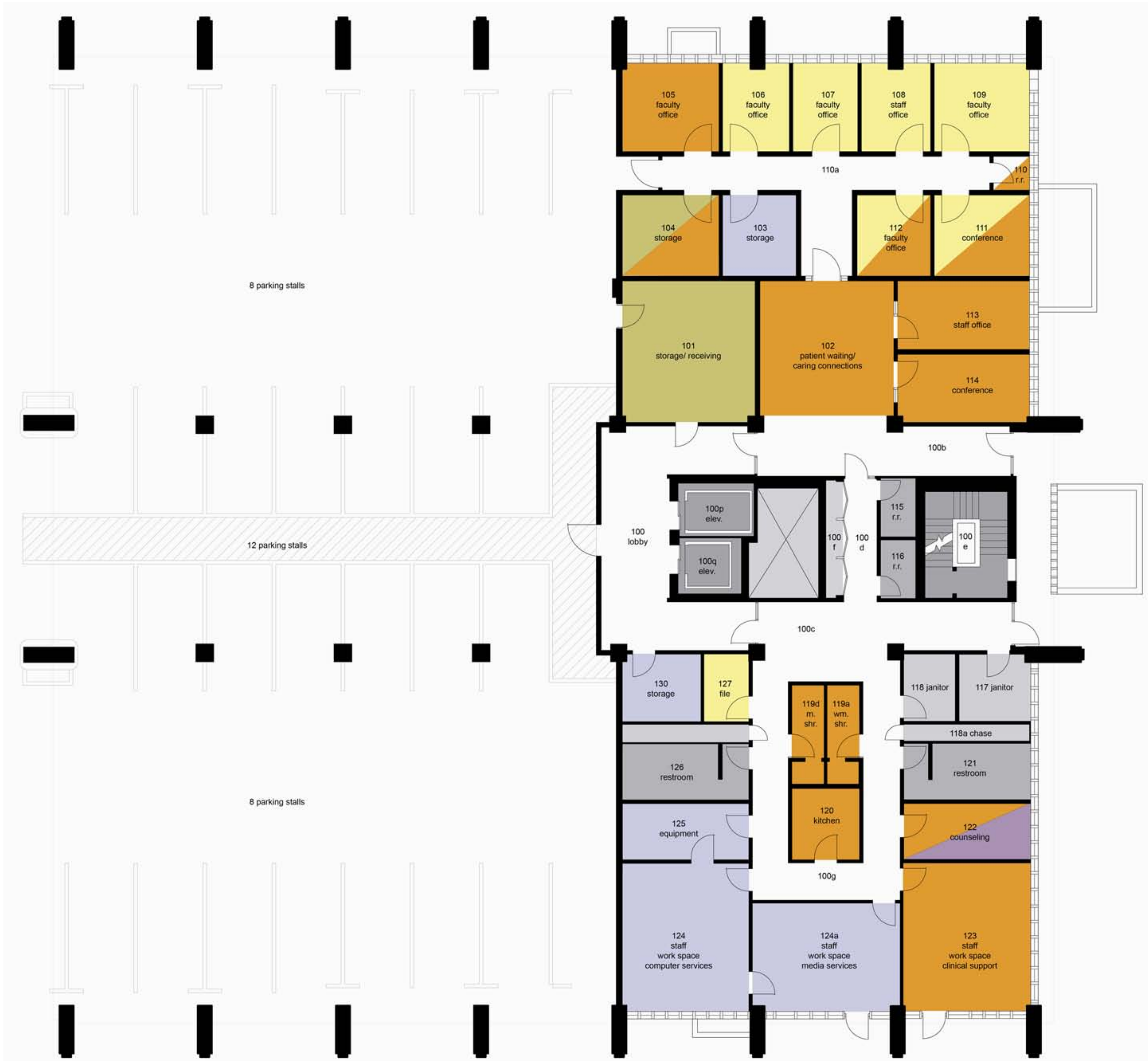
- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



PARKING LEVEL FLOOR PLAN

0' 8' 16' 32'

- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



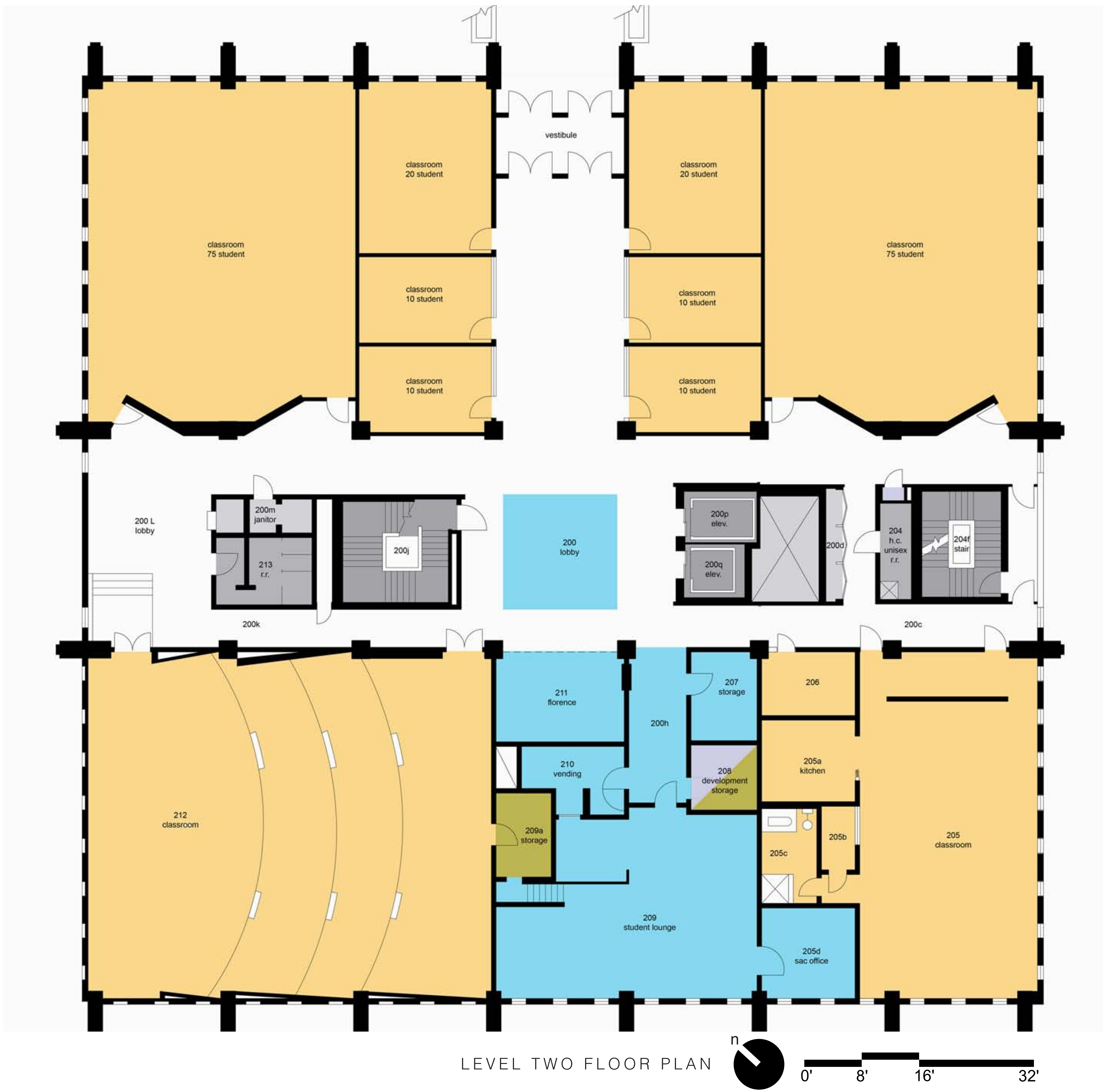
LEVEL ONE FLOOR PLAN

n

0' 8' 16' 32'

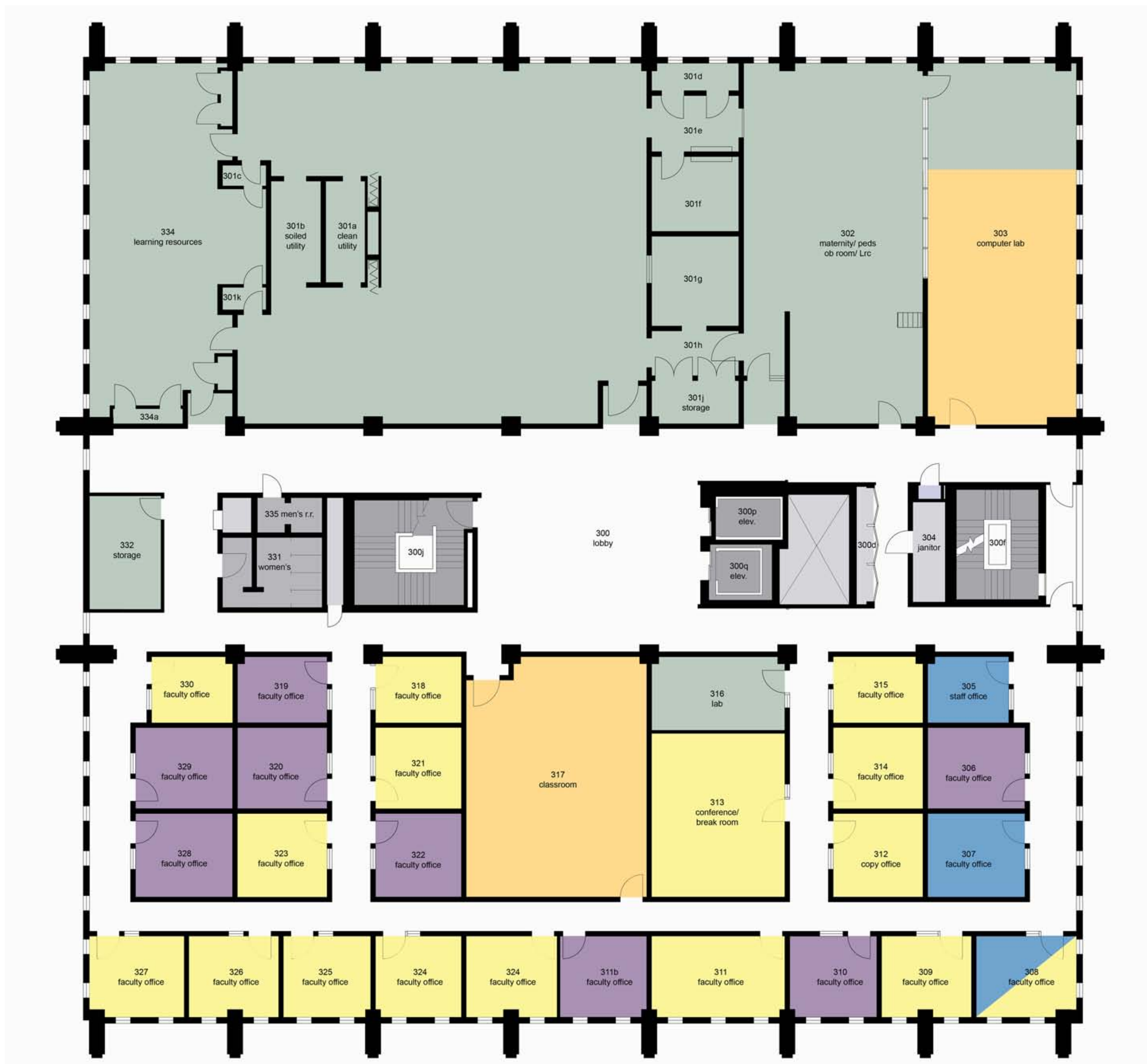
- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation

existing space utilization



LEVEL TWO FLOOR PLAN

- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



LEVEL THREE FLOOR PLAN

n

0' 8' 16' 32'

- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation

existing space utilization

LEVEL FOUR FLOOR PLAN

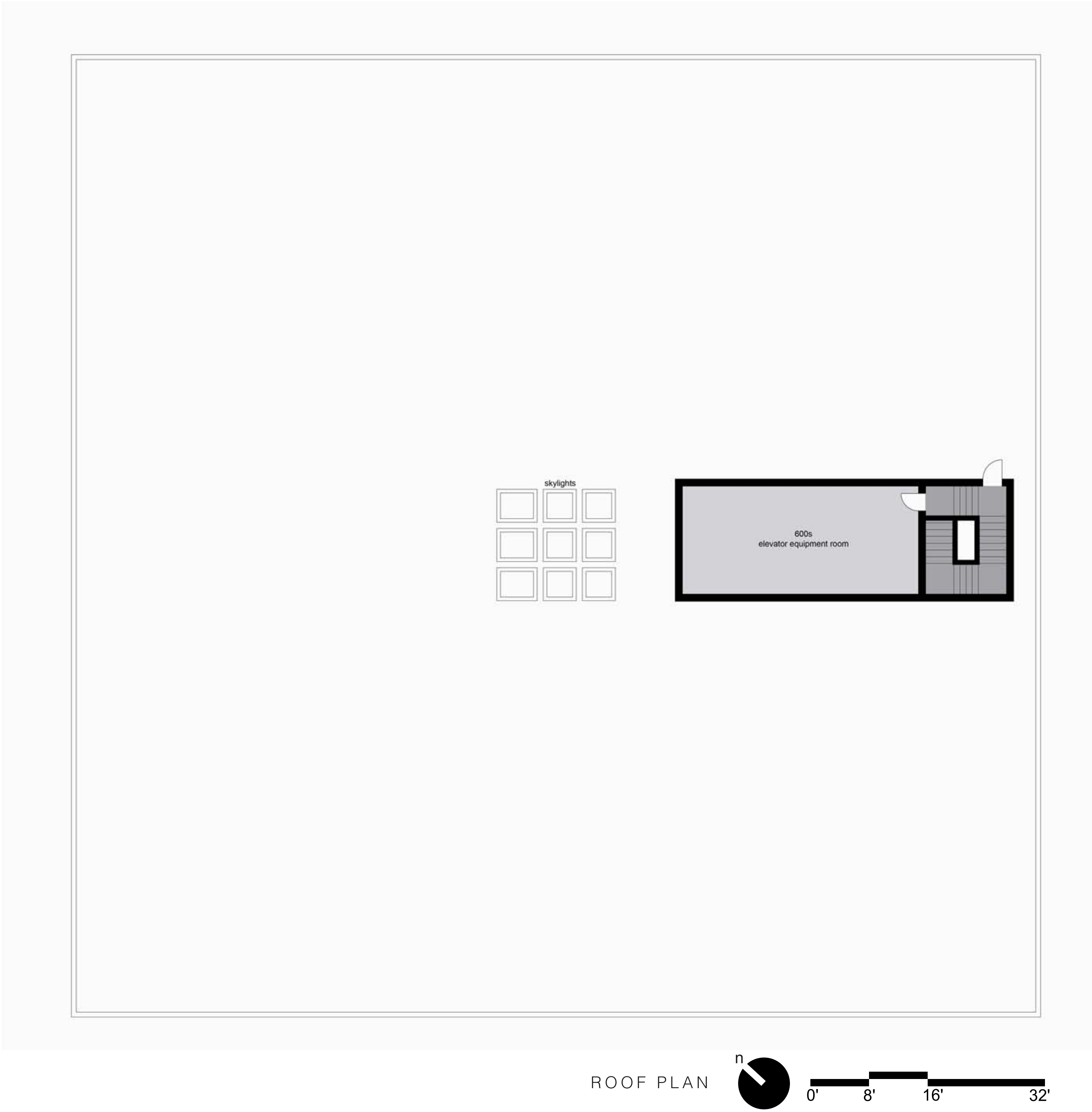
n

0' 8' 16' 32'

- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation

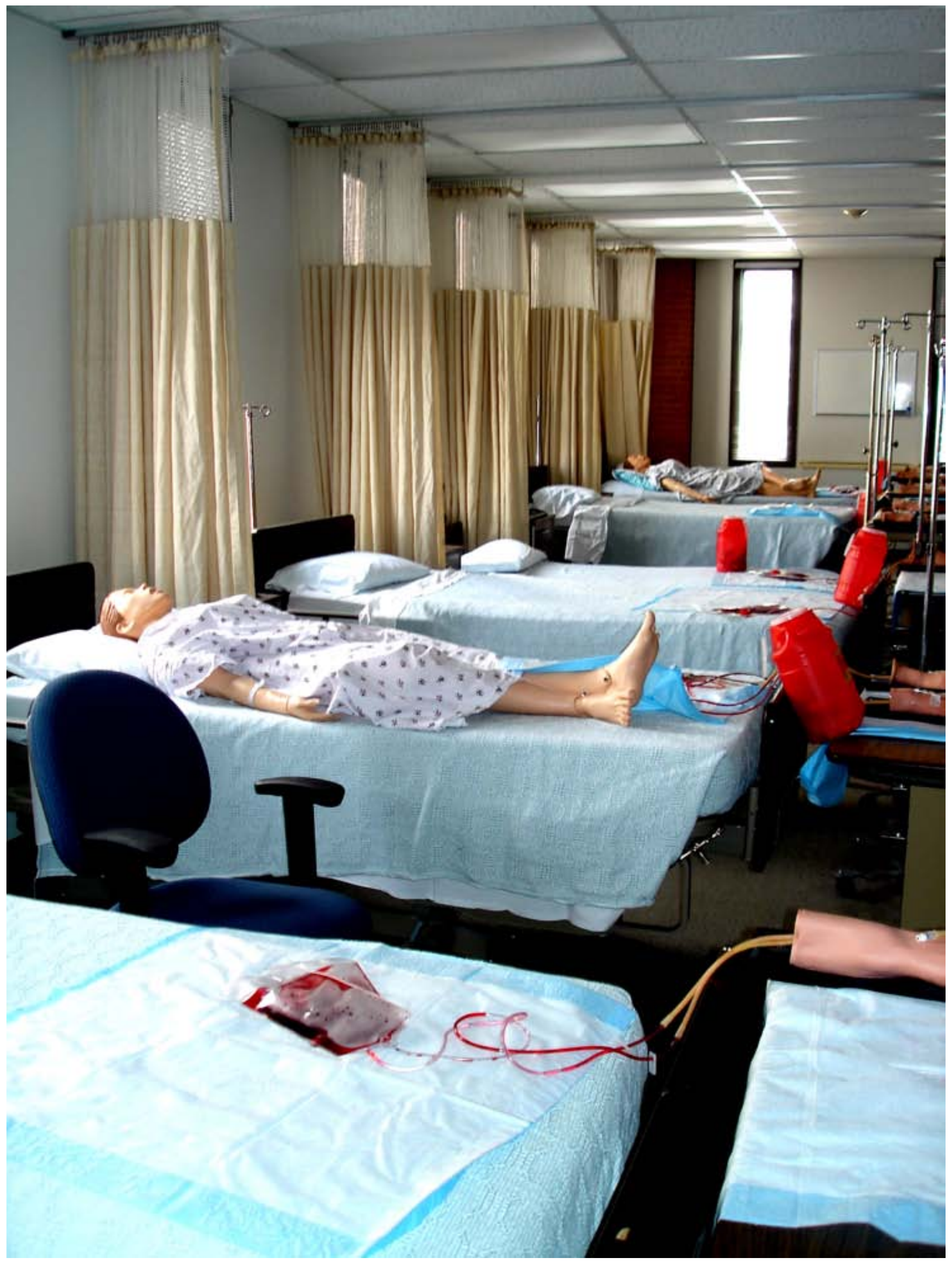
LEVEL FIVE FLOOR PLAN

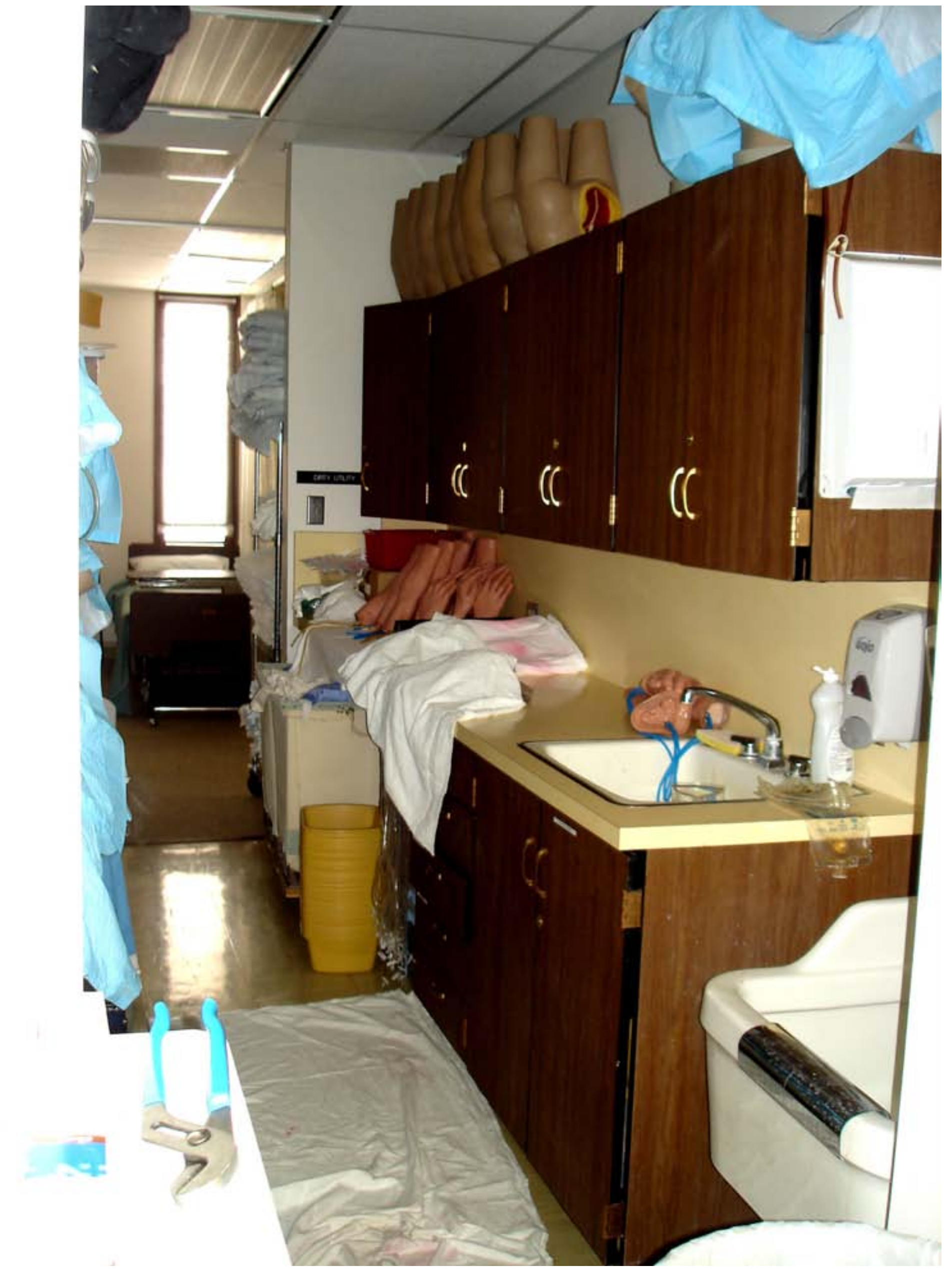
- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



ROOF PLAN

- health systems/ community based care
- faculty practice
- information technology
- acute and chronic care
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



SIMULATION LEARNING CENTER

FILE ROOM

OFFICE


STUDENT LOUNGE

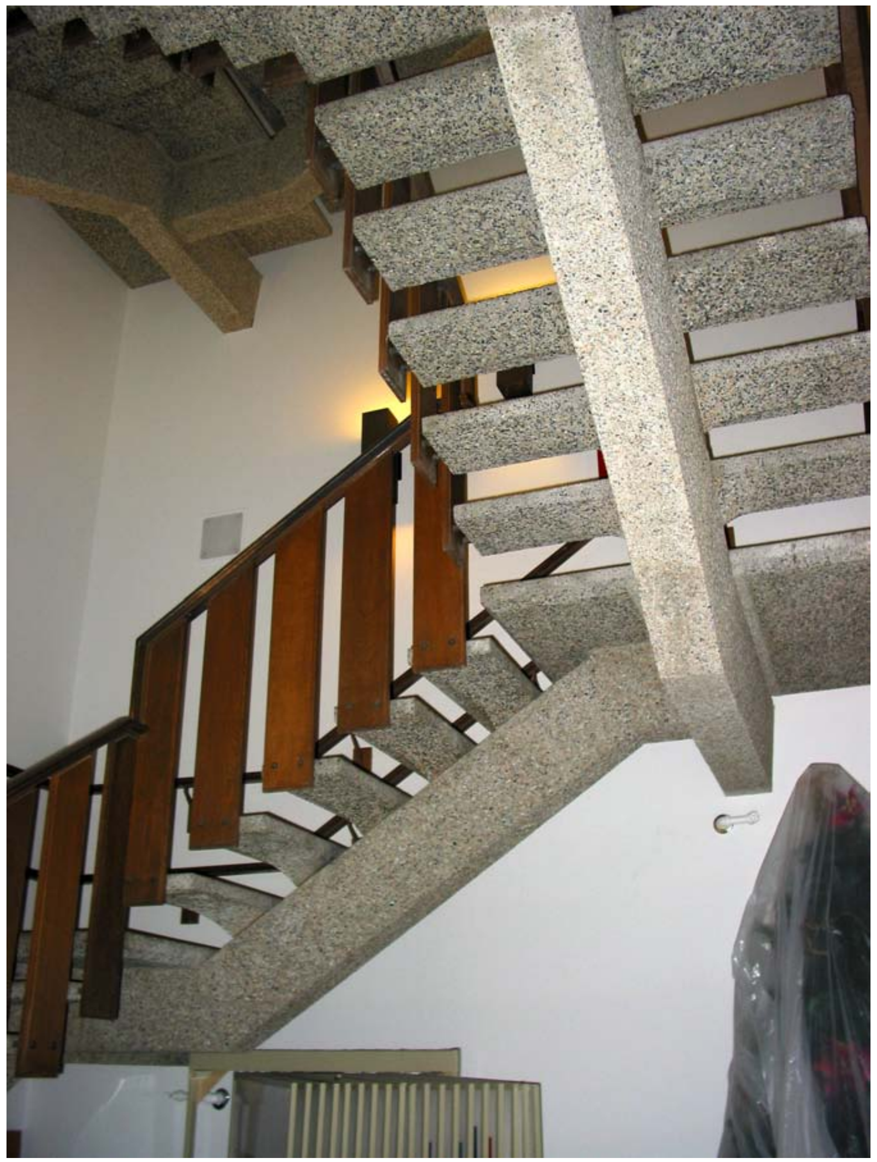

75 STUDENT CLASSROOM


20 STUDENT CLASSROOM


AUDITORIUM


10 STUDENT CLASSROOM

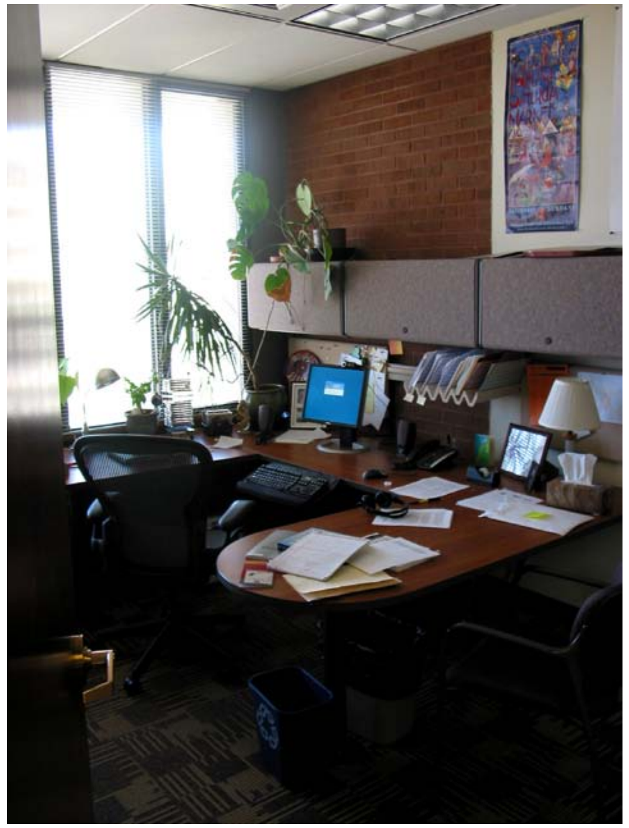
RECENTLY REMODELED SPACES ON LEVEL 2 TO REMAIN



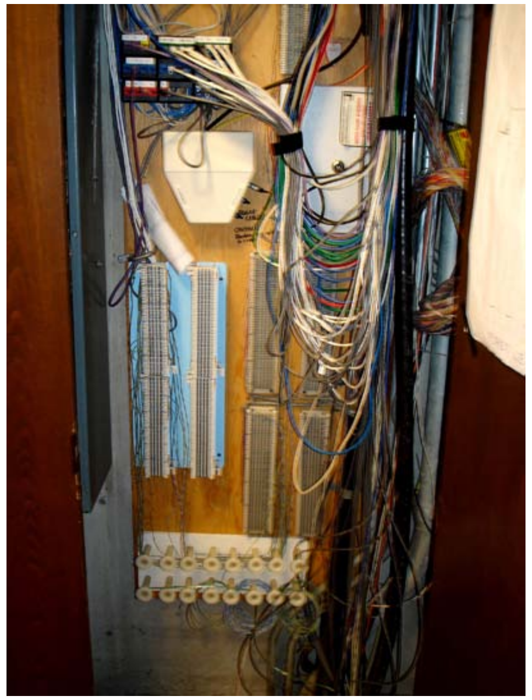
EXISTING NORTH STAIR

EXISTING SOUTH STAIR

EXISTING RESTROOM



RECENTLY REMODELED SPACES ON LEVEL 5 TO REMAIN





EXISTING ELECTRICAL EQUIPMENT

EXISTING MECHANICAL EQUIPMENT

Building Requirements 04

Architectural Design Criteria

Identity, History and Growth, and Justification

Over the last decade, health care delivery and related higher education have experienced unprecedented growth and change nationwide. The College of Nursing at the University of Utah is no exception, experiencing growth and change in all the missions of the University: education, research practice and service. In addition to a nursing shortage across the country, there is also a nursing faculty shortage. The evolution of information exchange technology and simulation-based learning, as well as changes in the global marketplace and increased population diversity, call for a dynamic approach to preparing the next generation of nurses and health care professionals.

The College of Nursing has expanded its program in a strategic response to this growth and change. Total student enrollment average for years 2000 through 2005 was 463 students. Currently, 581 students are enrolled for the 2007-2008 Academic Year (over 25% growth), including 303 undergraduate students, and 278 graduate students.

Faculty has experienced similar growth, and is currently at 110 (including Full-time Clinical/Research, Tenured, Tenure Track, and Part-time Clinical) and staff (both Academic and Research) is at 44. With the program's continued success, the College is planning for growth of both students and faculty to continue into the near future.

Fortunately, previous efforts, at the master planning level as well as the strategic planning level, have positioned the College of Nursing to not only be ready for the growth and change, but to be an international leader in research and education for nursing and health care.

In order to advance this position, the College of Nursing has made significant investments in research and research infrastructure that have already yielded steady growth in extramural research funding. Recent recruitment of tenure-track faculty with promising research programs attest to this fact. Further evidence is a recent increase in NIH ranking for research funding among schools of nursing.

Furthermore, the College of Nursing has embraced technologies for distance-learning formats to maximize its reach, not only to rural areas in Utah, but to students, faculty and practitioners around the globe. The College of Nursing leads the University in programs and courses that utilize distance technology in web-based programs (RN to BS, Gerontology Certificate program, Teaching in Nursing MS and Certificate, Rural NP program) and teleconferencing (PhD in Oncology Nursing).

The College of Nursing's 2007-2010 Strategic Plan captures their vision and goals, as well as challenges they are anticipating:

- The student body will increase in diversity, will come from all over the world, will be multicultural, multilingual, and will possess widely-varied learning styles and social skills.

- Students will prefer hands-on patient simulation and customizable, self-directed learning over traditional lecture and a non-linear, recursive curriculum.

- Students and faculty will see their educations as a process, engaging in life-long learning. They will demonstrate process-based competencies tied to emergent global models, partnering with colleagues across disciplines.

- Faculty will balance technological advancements with the core concepts of relationship-based care and the principles of health and wellness through mentoring and role modeling.

- The College of Nursing will be widely recognized for its pioneering interdisciplinary collaboration. It will redefine the "art of nursing"— collaborating with expert clinicians and researchers, coaching patients in self-management and embracing alternative approaches to care.

While the Strategic Plan provides vision and direction for the College of Nursing, its facilities stand in stark contrast to the vision and the program itself.

During Master Planning (2005) it was determined that the College of Nursing should stay in the existing location since it is in close proximity to Hospitals and is adjacent to related Health Sciences buildings (See Section 2 for details). However, the existing College of Nursing Building (originally built in 1968) at approximately 77,461 GSF, is at capacity, and is substandard in terms of functional and energy efficiency, utility infrastructure, and current life safety and building code compliance.

The structural system for the entire building does not meet minimum requirements to resist lateral forces such as earthquakes (seismic forces). Fire suppression systems and alarm devices are inadequate and inconsistent throughout the building. The existing stairs do not meet current code requirements for common use, and are even more deficient with respect to emergency egress. Hazardous materials, such as asbestos in the original architectural finishes, present a health risk. Additionally, elevators, mechanical (HVAC) and plumbing equipment, telecommunications and data equipment, and electrical systems and equipment are beyond their life expectancy in most cases and need to be completely replaced.

Ad hoc remodels over the past 40 years have resulted in space layouts unsuited to current and future needs, and inconsistent architectural finishes and lighting strategies. Shared areas such as student lounges, meeting rooms, copy / fax / work rooms, and break rooms are limited. Faculty offices are of inconsistent size and quality, and are scattered on several levels of the building, thus reducing operational efficiency.

The existing simulation lab is undersized, under-utilized and obsolete. The existing lab does not have the infrastructure or the space for state-of-the-art patient simulation. Also, the existing simulation lab lacks adequate storage space.

Relatively recent remodels to the majority of the existing classrooms and existing auditorium have improved the educational environment, but still lack the technology to maximize all formats of teaching/learning. Similarly, a remodel of the research office suite provided much needed improvement to the research environment, due to budget constraints, did not include any building systems upgrades.

In addition to obsolete mechanical systems, the existing windows are evidence of the building's lack of energy efficiency. The existing single-pane glazing does not provide an adequate thermal barrier to the fluctuating temperatures outside of the building.

Lastly, existing restroom fixtures are inadequately distributed among men and women, and are inconsistently located on various floors throughout the building. Additionally, the existing restrooms do not meet ADA accessibility standards.

Given the existing conditions, it became a University priority to significantly renovate and upgrade the existing College of Nursing Building and its infrastructure in order to align the facility with life-safety and code requirements, the State's High Performance Building Rating System, and the College of Nursing's vision and strategic planning goals.

In December 2007, DFCM contracted with ajc architects and consulting engineers to work with the College of Nursing to develop and refine a program of spaces to be included in the building renovation. This section elucidates the essence of the renovation project and is intended to be the foundation for subsequent design phases.

The majority of the project is an extensive interior renovation with a complete mechanical / electrical systems upgrade to rectify serious concerns listed above.

The interior renovation to the College of Nursing Building will provide a safe, healthy, comfortable and energy-efficient environment that can accommodate the current needs, as well as future growth, for administrators, researchers, practitioners, faculty and students.

The removal of hazardous materials (asbestos) from the existing building is a critical first step in the renovation process. Removal of all finishes containing asbestos will provide the most healthy environment possible for research, practice, teaching and learning. See the Hazardous Materials Report in Appendix C for details.

New structural bracing near each of the four corners of the existing building, on the east and west side, as well as bracing on the north end of the building will provide seismic resistance required for a modern building. See the Structural Design Criteria in this section for details.

The interior renovation will include new mechanical/electrical systems and distribution throughout the entire building. Levels 1 through 5 will be significantly reconfigured/renovated to improve efficiency, flexibility, continuity (way-finding), and shared / common spaces. The renovation includes the core spaces on every level (restrooms, stairs, elevators, and electrical and telecom/data rooms).

The interior renovation will provide a significant upgrade to the Simulation Learning Center. This Center will be a state-of-the-art core facility for the University, not only for the Health Sciences campus, but for the State as well. Additionally, while existing classrooms will be maintained, increased technological capacity will allow the College to improve and grow its global reach through successful distance-learning programs.

While the project is largely an interior remodel, there is some work associated with the exterior of the building, including: site work associated with providing new or modified utility lines to adequately serve the new mechanical/electrical systems; and replacing existing single-pane exterior windows with new energy-efficient window systems through-out the entire building. The need for new landscaping/hardscaping will be minimized to that which is needed for repairs due to demolition/construction operations. See Section 2 for details.

Functional Relationships

The people, activities, and relationships already in the facility will be relatively unchanged. Students, Faculty, Staff, Researchers, and Administration will continue to use the auditorium and classrooms, the Simulation Learning Center, and offices and related support spaces. However, the renovation will make significant improvements to access and adjacency. Student functions will be consolidated on Levels 1 and 2. Offices for faculty, researchers, and administration will be consolidated on Levels 3, 4, and 5. The following paragraphs describe the function of each level in detail. Also, see Section 5 for the Space Program and Area Summary and Building Organization and Stacking diagrams.

An expanded Simulation Learning Center will be an essential element in nursing education, providing students, faculty, and practitioners access to state-of-the-art technology and facilities. It will occupy the entire floor of Level 1. In order to maximize the potential square-footage, approximately 9,430 GSF will be captured from existing covered parking in addition to existing square-footage on this level, for a total of approximately 16,700 GSF.

The classrooms and the auditorium will remain on Level 2. Reconfigured student study/lounge space will be provided on this level. The new study/lounge space will offer multiple mode computer connectivity as well as various arrangements of seating and tables (formal and informal). Academic Affairs and Student Services will be relocated to Level 2 to provide students with greater access the services needed/provided.

With the proposed relocation of the Simulation Learning Center to Level 1, nearly 7,000 GSF will be freed up on Level 3 for offices and growth. Faculty and Administrative offices will remain on Levels 3 and 4, but will be reconfigured to maximize efficiency and flexibility while accommodating currently preferred adjacencies. Centrally located common spaces, conference rooms, and shared work and break rooms will provide opportunities for collaboration and connection across groups.

The Health Systems/Community Based Care (HSCBC) Division and Faculty Practice prefer to be adjacent, and may be colocated on Level 3. IT work and storage space will also be located on Level 3. On Level 4, an administrative suite will identify and define the Dean's office, and maintain immediate adjacency to the Associate Deans, Directors and related support spaces. The Program Document proposes to locate the Acute and Chronic Care (ACC) Division on Level 4.

Level 5 will continue to house the Research Offices. The west side of Level 5 was recently remodeled and modifications will be limited to those necessary for seismic bracing and some minor mechanical/electrical work. The east side of Level 5 will be completely renovated for Research offices and related meeting and project spaces.

Simulation Learning Center

The Simulation Learning Center (SLC) is a core facility for the University of Utah, promoting interdisciplinary education throughout the Health Sciences. It is used by the College of Nursing, and other Health Sciences academic departments, and it will continue to be utilized by hospital educators for training and certification of hospital nursing staff. The relocation / renovation of the SLC will contribute to the College of Nursing Strategic Plan by developing and implementing activities to assist faculty and students in engaging multiple learning modes. Similarly, it will support faculty and staff by providing access to new teaching technologies.

Nearly 400 students annually use of the SLC. Almost thirty members of the College of Nursing faculty teach courses that rely on the SLC. One teaching assistant and six clinical faculty associates work with the faculty using the facility. In addition to the director, there are currently two full-time staff members that oversee the SLC.

The following project objectives have been identified for the relocation / renovation of the SLC:

• Replace/supplement in-patient clinical experience for nursing and other health sciences students, as well as hospital and clinics personnel.

• Create space capable of promoting interdisciplinary education and engaging employees, students, and faculty from all health sciences colleges and hospitals and clinics in patient care simulation with increased fidelity.

• Provide space for simultaneous specialty simulation such as isolation, critical care (adult, pediatric, neonatal), total maternity care, pediatric care as well as rehabilitation and home care.

• Provide adequate central storage and workspace for staff, TA's, and director.

• Separate classroom demonstration area from simulation space and provide non-interfering small group meeting areas which may double as nursing stations.

• Provide space to display/store models as well as adjacent surfaces to work with these items in individual or small group settings.

• Increase patient safety by requiring students to familiarize themselves with the objects and equipment of patient care as well as repeated practice in a simulated setting prior to actual patient contact.

• Update and revise related building security and access components to allow longer operating hours and thus increase availability and use.

• Provide space in which to house and utilize the cutting edge technological developments in simulation mannequins.

The Program for the new SLC includes (10) rooms for high-fidelity simulators, which are to be supported by (2) immediately adjacent control rooms with vision access to the simulators. Open floor area for pods of beds (24 total), and (4) private rooms will provide the required space for lower-fidelity simulation for both small groups and individuals. The open floor area will also provide the SLC with some flexible space. (4) procedure rooms, (2) centrally located debriefing rooms, and centrally located nurses stations (with adjacent medicine preparation rooms, medicine storage rooms, and laundry rooms) will support the simulation spaces. General storage rooms with adequate space for mannequins and parts are included in the program. A central reception area should be located near the elevators, with a waiting area, and access to restrooms, changing rooms, and personal lockers. See the Program Spreadsheet and Level 1 Test-Fit Floor Plan in Section 5 for illustration. See the Mechanical and Plumbing, Electrical, and Technology Systems Design Criteria in this section for related systems information. Also, See the Simulation Lab Equipment Planning Checklist in Appendix G.

Master Plan Reconciliation

The Program Document is consistent with the intent of the College of Nursing Master Plan (2005 by ajc architects), the Learning Resource and Simulation Center Renovation and Expansion Program Document (2004 ajc architects), and the Research Program and Fifth Floor Master Plan (2002 Thomas Petersen Hammond Architects). However, in order to align the Master Plan with the current budget and available space, the total programmed space has been reduced from 93,891 GSF (as proposed in the Master Plan) to 87,597 GSF (see Section 5 for details).

Form and Architectural Finishes

As this project is essentially an interior remodel, the program does not necessitate any substantial variation from the existing physical shape of the College of Nursing Building. While the program proposes to enclose the first floor, minimal to no change to the building's form / mass is expected. However, there will be an opportunity for moderate exterior improvements where the existing building envelope is impacted by the new seismic bracing solution on the north, east, and west facades. Similarly, where new stairways are required to reconcile the building with code requirements, there will be opportunities to enhance the character of the building's envelope. New architectural and structural elements and materials will provide an opportunity to communicate that the College of Nursing Building is a state-of-the-art educational facility, and should reflect the recent design direction of other new facilities on the Health Sciences Campus such as HSEB. It is anticipated that brick masonry, metal, and glass would be appropriate materials, and each should be considered for their aesthetic value as well as their contribution to LEED Silver design goals. The extent of architectural modifications to the exterior of the building will depend on internal changes dictated by detailed code and structural analysis, and thus will need to be studied during subsequent design phases.

The renovation to the College of Nursing Building is a long-term investment. Both exterior and interior architectural finishes should be selected for durability and ease of maintenance as well as sustainability, and aesthetics. Life-cycle costs in comparison with project financial projections and value-engineering considerations should be considered.

Internal Relationships

In addition to the functional relationships described in the preceding text, other important factors must be considered in subsequent design phases; personnel interaction, circulation, natural light, and views. Each of these elements should be considered for both student spaces and faculty, staff, research, and administration spaces.

Personnel Interaction:
In the true interdisciplinary nature of the facility's occupants, interaction and collaboration among the following groups should be encouraged to the highest degree possible:

Students among different programs
Graduate and PhD students
All Students and Faculty
Faculty among different departments and programs
Faculty, Staff, and Administration

In order to promote interaction, all public and semi-public spaces should be centrally located - near common lounge / lobby spaces, work rooms, copy / fax rooms, break rooms, elevators, stair ways, and restrooms, and should be in proximity to the major programmatic elements of the facility.

Circulation:
External circulation is already defined for the main entry point to the facility on Level 2 (classrooms). The program assumes that existing external circulation paths will continue to route personnel and visitors to the main entry point on Level 2. However, new external circulation and access points will need to be considered on Level 1 where the new infill for the Simulation Learning Center will be located. The highly secure nature of the Simulation Learning Center presents a challenge to personnel circulating from the parking lot on the north side into the building. The Test-Fit floor plans propose only secondary access points on Level 1.

While internal circulation will be modified with the relocation of the stairways, the general circulation pattern will remain essentially the same. The east - west core of the building provides the main access to the common lobby, classrooms, auditorium, student lounge and elevators on Level 2 . The north- south core of the building on all levels provides access from central lobbies / lounges to restrooms and stair ways. On levels 3 through 5, double-loaded corridors branch to the east and west from the main core, providing efficient access to offices, work rooms, etc. Single-loaded corridors are to be minimized.

Natural Light and Views:
Windows are a much sought-after commodity in most campus facilities. Additionally, natural light and views are critical to a successful LEED certified building design. In general, the program assumes the priority to provide every possible office with natural light and a view. Where this is not possible, strategies to "borrow" light should be utilized. Conference Rooms should also be considered for natural light and views where possible. See the Test-Fit floor plans in Section 5 for illustration.

An alternative open floor plan layout was studied during programming to maximize natural light (as well as office space) for as many people as possible, and is provided in Appendix E.

Code Narrative

The existing Nursing Building is assumed to be non-compliant in various areas. The major area of non-compliance is assumed to be the stairs and the associated exits through it. The existing building appears to meet the requirements for Type IIIB construction based on building materials, fire sprinklers, and allowable area.

The existing building structure is masonry, concrete, and steel, Type IIIB construction (assumed).

These materials comply with code for this type of construction. The partition walls of the interior appear to be gypsum board over metal studs. The shaft walls appear to be concrete.

Doors at stair enclosures appear to be rated, however they do not have smoke seals. Rated corridors are not required per table 1017.1 (with sprinkler system). Where fire barrier walls may be required to separate uses, the door/ frame assemblies are not rated.

Code Analysis

Part 1 - Codes, Regulations, and Safety

The governing codes for this project are listed below. The Design Team and Architect of Record will need to be verify at the beginning of the design phase all required codes and regulations. It is the Design Team and Architect of Record's responsibility to utilize all latest revisions, editions and adopted versions. The following list presents current applicable code issues and is not a complete list of applicable codes.

- International Building Code (IBC) 2006*
- International Plumbing Code (IPC) 2006*
- International Mechanical Code (IMC) 2006*
- International Fire Code (IFC) 2006*
- Life Safety Code NFPA 101**
- National Electrical Code (NEC) 2005**
- Laws, Rules and Regulations of the Utah State fire Marshall
- The Utah Code for Energy Conservation in New Building Const. (ASHRAE Standard 9.1.1989)
- Americans with Disability's Act Title III, (ADA) rev. 1994
- Utah Division of Facilities and Construction Management Design Criteria
- State of Utah High Performance Design Standards
- Utah State Facilities Design and Construction Design Guidelines
- ICC/ANSI A117.1-2003 Accessibility Design Standards
- American Society of Heating, Refrigeration and Air Conditioning ASHRAE

* with Amendments.
** with Utah Amendments.

In addition, the design Team and Architect of Record will be required to coordinate their efforts with the Campus Design and Construction Department and DFCM.

Part 2

Occupancy Group (Chapter 3)			(T503) Const Type*	Area*		Height		Stories		(508) Mixed Use Type*	(508.3.3) Area Ratio
Floor	Name	Occup.		Tabular (T503)	Aa $I_{s\ only}$	Tabular (T503)	Increase	Tabular (T503)	Increase		
Sub-base	Mech	F-2	III-B	18,000	54,000	55	20=75	3	1=4	SU	.08
Basem't	Park'g/Off	S-2 S-1 F-2	III-B	26,000 17,500 18,000	78,000 50,500 54,000	55 55 55	20=75 20=75 20=75	4 3 3	1=5 1=4 1=4	IU ---- SU	.32
1st Level	Learning Center	B A-3,	III-B	19,000 9,500	57,000 28,500	55 55	20=75 20=75	4 2	1=5 1=3	SU SU	.37
_ 2nd Level	Student	B A-3	III-B	19,000 9,500	57,000 28,500	55 55	20=75 20=75	4 2	1=5 1=3	SU SU	.55
3rd Level	Faculty	B F-2	III-B	19,000 18,000	57,000 54,000	55 55	20=75 20=75	4 3	1=5 1=4	SU SU	.30
4th Level	Admin	B	III-B	19,000	57,000	55	20=75	4	1=5	SU	.30
5th Level	Research	B	III-B	19,000	57,000	55	20=75	4	1=5	SU	.33
Building Total		A-3	III-B	N/A	171,000	N/A	N/A	N/A	N/A	N/A	2.25

*Construction Type shall be the most restrictive occupancy req. for entire building (508.3.2 & 508.3.3)
*Area – Total Building Area dependant on Mixed Use Type (506.4 or 506.4.1)
*Mixed Use - IU=Incidental Use / AU=Accessory Use / SU= Separated Use / NSU= Non-separated Use

Part 3 - Area Modifications (506)

1) Frontage If = [F/P – 0.25] W/30 = (Provide analysis) = not used
2) Area Aa = At+(At x If) + (At x Is) = (Provide analysis)
Used: Automatic sprinkler increase 200% < one level; 300% = one level (At x Is)

Part 3 (continued)

Section 506.4.2; automatic sprinkler system
Aa = 57,000 sf times 3 =171,000 sf allowable area; (proposed = 87,300 sf)

Existing and Proposed Areas in square feet:

Floor	Existing Building	+ Building Addition	=	Totals
Sub-base	4,543	0		4,543
Basem't	23,952	0		23,952
Level One	7,104	9596		16,700
Level Two	17,300	0		17,300
Level Three	17,300	0		17,300
Level Four	17,300	0		17,300
Level Five	18,700	0		18,700
			Total	87,300

3) UNLIMITED AREA (507) = not used

Part 4 - Heights and Stories (504)

Exterior Wall Grade Plane Elevation

North	= 99 +/-
South	= 99 +/-
East	= 99 +/-
West	= 99 +/-
Average G.P.E.	= 99 +/-

Stories / Height	Stories	Elevation	1st story above G.P.E.
	Sub-Basement	72'-0" (28' below)	(no)
	Basement	88'-0" (13'-9" below)	(no)
	1st	100'-0" (GPE)	(yes)
	2nd	113'-9"	
	3rd	128'-5"	
	4th	142'-2"	
	5th	155'-11"	
Total	5 (stories/Above GP)	156'.42 (Bldg Ht.) = 56.42 ft.	

Part 5 - Automatic Fire Sprinkler (903. T503, 506.3)

Provided yes
(Yes) Required 200% Area Increase

Fire-Resistance
(No) Substitution 20 ft Height Increase; allowed hgt. = 75 ft.

Part 6 - Occupancy Separations (T508.3.3)

Occupancy / Occupancy	Rating	IBC / Ul Design #
S2 / B	1	to be determined
F2 / B	1	to be determined
S1 / A3	1	to be determined
A3 / B	1	to be determined

Incidental Use Area Separation (T5K08.2)
Parking garage (section 406.2) = 1 hour and provide automatic fire –extinguishing system

Part 7 - Other Building Elements (T601 and T602)

Element	Material	Rating	IBC / UL Design #/other
Interior Bearing Wall	____________	0	to be determined
Interior Non-Bearing Wall	____________	0	to be determined
Structural Frame	____________	0	to be determined
Exterior Bearing wall	____________	2	to be determined
Shaft Enclosure (403.3.2)	____________	1	to be determined
Floor Construction	____________	0	to be determined
Roof Construction	____________	0	to be determined
Stairs (1020.1)	____________	2	to be determined

Part 8 - Exterior Wall Fire Ratings and Opening Protection (704)

North for Occup.	Bearing	Non-Bearing Protection	Opening Material Required	Const Design #	Parapet	IBC / UL
________	yes	N/A	unlimited	N/A	no	N/A

South for Occup.	Bearing	Non-Bearing Protection	Opening Material Required	Const Design #	Parapet	IBC / UL
________	yes	N/A	75%	N/A	no	N/A

East for Occup.	Bearing	Non-Bearing Protection	Opening Material Required	Const Design #	Parapet	IBC / UL
________	yes	N/A	unlimited	N/A	no	N/A

West for Occup.	Bearing	Non-Bearing Protection	Opening Material Required	Const Design #	Parapet	IBC / UL
________	yes	N/A	unlimited	N/A	no	N/A

Part 9 - Exit Requirements

Floor	(1004) # of Occupant	(1019, 1015) # of exits	(T1005.1) Min. Stair Width	(1014..3) Common Path	(1014, 1017) Aisle or Corridor	(1016) Travel Dist.
Sub-base	15	1		100		400
Basement	114.5	2		100		250
1st Level	226	2	N/A	50 (smoke)	33.90(44”)	250
2nd Level	521(T1019.1)	3	34.73 (44/48)	50 (smoke)	78.15(44”)	250
3rd Level	138	2	13.80 (44/48)	100	20.70(44”)	300
4th Level	197	2	39.40 (44/48)	100	29.55(44”)	300
5th Level	169	2	16.90 (44/48)	100	25.35(44”)	300
Total Floor	1,380.5					

Part 10 - Additional Requirements

Accessible Means of Egress (1007)= two Accessible means of Egress is required from each level.
Accessible Route (3409.7)
Special Occupancy Requirements (Chapter 4)
Seismic Loads (1613)
List of Deferred Submittals / Phased Work / Changes (106)
Statement of Special Inspections (1704)

Part 11 - Fixture Count

Fixture			Required	Provided (per Test-fit)
WC	Male: 11	Female:14	25	27
Lavatories	Male: 8	Female: 8	16	25
Drinking Fountain			6*	7*
Service Sink			5	5

* Does not include accessibility count.

Structural Design Criteria

The structural design for this project should provide a building system which will integrate with the program requirements for space layout, as well as with the architectural and building service needs, while meeting current code standards for vertical and horizontal load carrying capacity.

The building structure shall be designed in accordance with the 2006 Edition of the International Building Code.

Codes and standards that apply to the design of this building are:

- 2006 International Building Code
- ASCE 7-05 Minimum Design Loads for Buildings and Other Structures
- DFCM Design Manual, March 15, 2006
- ASCE 41-06 Seismic Rehabilitation of Existing Buildings
- American Institute of Steel Construction (AISC) with Commentary
- ACI 318 Building Code Requirements for Reinforced Concrete
- American Welding Society (ANSI/AWS) D1.1 Structural Welding Code

Geotechnical Criteria

No geotechnical report is available for the building at this time. A final geotechnical report should completed to establish proper design criteria for new foundations that may need to be added to the building, or for the evaluation of the suitability of existing foundations to support increased load.

The following design issues should be discussed in the project geotechnical report. Other design issues may need to be considered as the project progresses.

- Soil bearing capacity
- Structural fill requirements
- Potential differential settlements
- Potential for expansion or collapse of soils due to moisture changes
- Liquefaction potential
- Groundwater restrictions
- Seismic considerations, coefficients, fault traces, etc.
- Lateral bearing pressures – active and passive
- Alternate foundation systems
- Pavement sections
- Strategies for augmenting existing foundations

The College of Nursing Building is located within the Wasatch fault zone and is located quite close to the Wasatch Fault. It is anticipated that the fault most likely lies to the east along the base of the mountains. This should be verified by the final geotechnical report. Geologic seismic hazard mapping indicates that this site could experience severe lateral ground shaking. For the College of Nursing building, the contour maps in the IBC indicate that horizontal spectral accelerations (Ss) are 1.77 g with one second spectral accelerations (S_1) equal to 0.79.

Existing Building Structure

The College of the Nursing Building was constructed in 1968. This building consists of a 4 story office and classroom building above 2 levels of parking structure. The upper level of the parking structure is at ground level. The parking structure was repaired in 1988.

The office and classroom portion of the building is a steel framed structure supported on concrete columns and walls at the lower parking levels. The columns at the upper steel framed portion consist of wide flange sections that are spliced at the second and fourth floors. The suspended floor slabs consists of 3" light weight concrete over 1 ½" deep composite metal deck. The concrete slab is reinforced with #3 bars at 12" o.c. each way. The metal deck at floors bears on wide flange beams with composite construction.

The roof structure is comprised of 2 ½" light weight concrete on 1 ½" deep, 22 Ga. Metal deck. The roof slab bears on wide flange steel beams.

The parking floor consists of a 4 ½" reinforced concrete slab supported by post tensioned concrete beams. The post tensioned concrete beams are supported by reinforced concrete columns and walls.

The lateral force resisting system consists of short reinforced masonry shear piers at the exterior, and steel moment frames in the two orthogonal directions at the interior of the building. The Reinforced concrete shaft walls located at the stairs and elevator core function as shear walls to resist lateral forces. Steel moment frames consist of steel wide flange columns and beams with bolted end plate connections. The concrete slabs at the floors and roof function as rigid horizontal diaphragms at these levels.

Evaluation of Existing Lateral Force Resisting System

The lateral force resisting system was evaluated based primarily on information contained in the original contract drawings for the building. Field investigation of the existing structure was limited, and no testing was performed. The findings of this evaluation are summarized in Seismic Evaluation Report prepared for ajc Architects dated June 23, 2005.

A computer analysis of the existing lateral force resisting system for the building was performed as part of this evaluation. A number of deficiencies were identified in the existing lateral force resisting system. The primary deficiencies that were identified are excessive lateral drift in the building, shear stresses in the concrete shear walls and masonry piers that exceed allowable limits, and deficiencies in the existing bolted end plate connections at the ends of the moment frame beams. Other deficiencies were also identified. Please see the evaluation report for a more detailed discussion of the deficiencies identified in the lateral force resisting system.

Upgrade of Existing Lateral Force Resisting System

Schematic retrofit approaches were developed in the evaluation report for each of the deficiencies identified. These retrofit schemes were developed based upon knowledge of existing deficiencies and engineering judgment. The following recommendations were made for upgrading the existing structure.

Addition of a new concrete shear wall located at the north end of the upper classroom/office floors, and running in the east-west direction, will significantly reduce the shear in the existing masonry and concrete shear walls. The new shear wall will also shift the center of rigidity of the lateral force resisting system closer to the center of the upper floors and reduce undesirable torsional deflections in the building.

The addition of new steel braced frames is recommended at the east and west exterior walls of the building. The new braced frames will reduce earthquake forces imposed on the existing concrete shear walls at the stair and elevator core, as well as the existing steel moment frame at the interior of the building. The braces are also intended to reduce lateral drift in the building to acceptable limits under the code. The schematic approach is to construct these new braced frames on the existing column lines at the east and west exterior walls. The existing columns will most likely need to be reinforced to resist overturning forces in the braced frames. It may also be possible to add new columns along side the existing columns where the new braced frames are constructed. It is anticipated that two new braced frames will be placed at both the east and west walls. Existing foundations under the new braced frames will most likely need to be strengthened and augmented to resist sliding and overturning forces in the braced frames.

Other options for seismically upgrading the existing building should be studied and evaluated as the design of the project progresses. The approach outlined in the evaluation report was proposed to concentrate seismic upgrade work at the exterior walls of the building to provide easier construction access and minimize disruption to the interior spaces of the building. If it becomes apparent that other seismic upgrade options may be more economical or feasible for the building, these options should be studied during the schematic design phase of the project.

New Stairs and/or Revisions to Existing Stairs

Architectural programming has recommended adding new stairs to the building and revising existing stairs to facilitate better flow between floors. The impact of new or revised stairs on existing floor structures shall be considered with the objective of reducing the degree of demolition and revisions to the existing floor structures, while still providing proper flow between floors.

Future Building Expansion

Future vertical expansion of the building is not anticipated and no provisions should be made in the structural design for future vertical expansion.

Horizontal expansion of the existing facility could take place in the future, although this is not anticipated at this time. It should be assumed future horizontal expansions will be self supporting for both gravity and lateral loads. The structural modifications and upgrades need not be designed to support future horizontal or vertical expansions.

Additions and Alterations to Existing Structure

Additions and alterations to the existing structural system of the building shall comply with 2006 IBC Chapter 34, particularly Section 3403.2 dealing with structural additions and alterations. The College of Nursing Building will have an occupant load greater than 500 people. As a result it is classified as an Occupancy Category III building for new construction under ASCE 7-05. Appropriate importance factors shall be applied to the design of new construction where required by the building code for Occupancy Category III.

Testing and Inspections

The Architect/Engineer, and the selected testing lab, shall perform periodic construction observations, testing, and special inspections, as outlined in Chapter 17 of the International Building Code. The design engineer shall list all required special inspections on the contract drawings, and perform periodic construction observations as required by the A/E agreement. Costs for special inspections and testing services will be paid for directly by the owner.

Mechanical and Plumbing Systems Design Criteria

General Mechanical

The design and construction of the University of Utah College of Nursing Remodel and Addition shall comply with the current State of Utah Division of Facilities and Construction Management's Design Criteria as well as the current University of Utah Design Standards.

The mechanical and plumbing systems for the buildings shall be energy conserving and suitable for the building occupancy. Systems and equipment shall have a proven history of providing efficiency and optimal energy conservation. The systems shall comply with the State of Utah High Performance Building Rating System as further detailed. The mechanical and plumbing systems shall be designed in a manner to facilitate regular maintenance.

The control system shall be an electronic DDC system tied into the central campus control system, either the Staeffa Talon front end, or the Johnson Metasys front end. Provide complete operation and maintenance manuals at the completion of the project as well as a complete set of record drawings and specifications.

All equipment shall be clearly labeled. Equipment, piping and ductwork shall be painted and labeled as required by the University of Utah guidelines.

Design Conditions

The mechanical system shall be designed to maintain comfort condition in accordance with ASHRAE Standard 55, ASHRAE 90.1-2004, the DFCM A/E Design Guidelines, and University of Utah Design and Construction Standards.

Elevation:	4750 Ft.
Lat / Long.	41°15' N, 111°57' W
Ambient:	
Summer	97°F DB 62°F WB
Winter	0°F DB
Indoor Conditions	
Summer	75°F
Winter	72°F

Envelope U-values

Building envelope shall be designed in coordination with mechanical systems in order to achieve the High Performance Building Rating system Requirements.

Ventilation Rates: ASHRAE 62-1 – 2004

Internal Heat Gain:

People: ASHRAE Estimates for Level Activity

Equipment: ASHRAE Estimates or manufacturers data for the following:

- Computers
- Copy Machines
- TV Monitors
- Other heat producing equipment

Lights: ASHRAE 90.1 – 2004 adjusted as necessary for special occupancy or task requirements.

Applicable Codes

The mechanical system throughout the building shall be designed and installed in accordance with the most recently adopted of the following codes and standards:

- Life Safety Code
- International Building Code (IBC) including all appendices
- International Mechanical Code (IMC)
- International Plumbing Code (IPC)
- International Energy Conservation Code (IECC)
- International Fuel Gas Code (IFGC)
- National Electrical Code (NEC)
- National Fire Protection Association (NFPA)
- ASHRAE 90.1 - 2004
- ASHRAE Standard for Ventilation 62-1 2004
- ASHRAE Guides and Standards (ASHRAE)
- State of Utah Boiler and Pressure Vessel Rules and Regulations
- American Society of Mechanical Engineers (ASME)
- American Standards Association (ASA)
- American Society of Testing Materials (ASTM)
- Sheet Metal and Air conditioning Contractors National Association (SMACNA)
- Occupational Safety and Health Administration (OSHA)
- DFCM Indoor Air Quality Criteria
- Utah State Division of Facilities and Construction Management (DFCM) ~ Architect / Engineer Design Guide.
- University of Utah Design Standards

Systems Considered

Dual Duct System

Advantages. The existing system is a dual duct system. We looked at the possibility of replacing the components, but staying with the dual duct system. The primary advantage of this option would be that the project could potentially be remodeled in phases by staying with the original system. Since the project will not need to be done in phases, this advantage is not as valuable. There is still the advantage of directly connecting the recently remodeled 5th floor west side system, and the classrooms and auditorium on the 2nd floor if desired.

Disadvantages. The dual duct system typically does not control as precisely as other systems, such as a single duct VAV with reheat system. It also typically uses more energy due to the mixing of air, although a neutral deck and variable flow technology can make it operate much more efficiently than the existing constant volume system. Another disadvantage is physical space. The shaft size and ceiling heights will be constrained by the existing building, and feeding every box with 2 full size ducts requires more space.

VAV with Reheat

Advantages. The VAV with reheat system is very adaptable to individual temperature control, and will easily accommodate the University standard of individual temperature control. It also has a lot of flexibility for additional temperature control and future renovations. The system is very energy efficient, and has many opportunities to optimize energy usage. It is a proven, tried and true reliable system, which typically results in reduced maintenance costs, and reduced problems or failures associated with lack of maintenance.

Disadvantages: There are recently renovated areas that already have the dual duct system installed. This system will require replacing the existing boxes, routing new heating water to the new boxes, and making ductwork modifications upstream of the existing boxes. Another disadvantage is that the overhead supply and overhead return in the heating mode does not typically mix as well closer to the floor and at the perimeter. This situation can be aggravated depending on furniture layout near the perimeter.

Underfloor or Raised Floor Displacement Ventilation

Advantages: The underfloor displacement ventilation system is designed to deliver a better air quality to the space by displacing the air, rather than mixing it. This also gives an ability to provide warmer discharge air temperatures. A major advantage of the underfloor system is the flexibility to quickly and inexpensively re-distribute the air in remodels, in order so save money in what is called office churn.

Disadvantages: The underfloor system tends to work better for large open office areas, such as areas with lots of cubicles. When there are multiple hard offices, the ability to provide individual office temperature control is reduced, and cost to do so increases. The perimeter areas still need re-heat piping, which reduces the flexibility and increases the cost in areas with a lot of perimeter. The flexibility of office churn is really reduced with an increased amount of perimeter zones, and hard offices, both of which are abundant in this building.

AV Cooling, Perimeter Radiant Fin Tube Heating

Advantages: The VAV cooling system is very flexible, and gives the opportunity to provide individually controlled cooling in as many zones as desired. The quality of heat from perimeter radiation is very desirable, and in an existing building where the building skin may not be as thermally efficient, perimeter radiant heat would help pick up the skin heating load very effectively.

Disadvantages: If interior spaces have only overhead cooling with no method of heat, they can be sub-cooled by continuously bringing in the minimum amount of ventilation air. Even if a particular room has both the overhead cooling and the perimeter heating, the cool drafts from the ceiling can be very undesirable, even though the room temperature is acceptable. If re-heat is added to the overhead system, it can reduce or eliminate the problems with sub-cooling and drafts, however the system with overhead re-heat and perimeter heat will have to sources of heat, and along with that an increased construction cost.

Recommendations

Due to the type of use and the existing conditions of the building, we recommend using the VAV with reheat system. This system will most efficiently meet the University's requirements for individual temperature control, while maintaining a high level of energy efficiency, and maintainability. Although it will impact the recently renovated spaces, the impact should be limited enough to be feasible. Depending on budget, we recommend considering perimeter fin tube radiation in addition to the reheat at the boxes. See the following more detailed description of the individual components for the recommended system.

Heating System

Heating source shall be campus supplied high temperature water. High temperature water shall be converted to building heating water at a new shell and tube high temp converter per the University guidelines chapter 8. The campus high temp water has been recently modified and upgraded with a 6" stub-out for this building. This project shall connect to the existing high temp stub-out, and bring a new high temp feed into the building. Building heating water shall be 180°F heating water and shall be distributed through a two pipe, direct return system to the building. Hot water pre-heat coils shall be installed at air handling units, and hot water re-heat coils shall be installed at the VAV boxes. Design team shall evaluate the possible use and associated cost and benefit of perimeter fin tube radiation with the owner, particularly on the fifth level where a portion of the floor is exposed.

The hot water pumps shall be designed with 100% redundancy. The hot water system shall consist of hot water distribution pumps with variable frequency drives, pre-heat coil circulating pumps, air eliminator, and expansion tank complete with automatic make-up water system. The entire hot water system shall be controlled by a DDC control system, and completely integrated into the existing campus central control system. Provide a building BTU meter to measure instantaneous flows, as well as cumulative flows. Flow meter shall have a manual reading at the building, as well the ability to communicate readings via the central control system.

Cooling System

Cooling source chilled water provided by central chiller plant. Replace the existing 6" chilled water feed, and re-connect to existing campus chilled water loop outside the building. See campus chilled water master plan. Building chilled water loop shall consist of a tertiary building chilled water pump with a variable frequency drive.

Building chilled water system shall be completely integrated with the campus central control system. Chilled water supply piping shall supply 45° F chilled water to cooling coils located in building air handling units. Coils shall be designed for a 10° F water temperature rise. Provide a building chilled water flow meter to measure instantaneous flows (in gpm), as well as cumulative flows in (in gallons). Flow meter shall have a manual reading at the building, as well the ability to communicate readings via the central control system.

Computer server rooms/ Teledata rooms shall be provided with independent dedicated precision cooling units, with roof mounted condensers. Provide cooling in simulation lab control rooms, which will have multiple computers, monitors, etc. Design team shall coordinate exact cooling requirements for control rooms.

Air Systems

Air system for the buildings shall be a VAV with reheat system. VAV system shall be designed in accordance with University Standards Chapter 6, including a dedicated VAV box for each classroom and office. Include a minimum 2 personal computers per person in each office for load calculations. Coordinate other heat load sources during design. The 5^{th} floor west side, as well as 2 classrooms and the auditorium on the 2nd level have been recently renovated. The intent of this renovation will be to limit the construction in these areas as much as possible.

The existing dual duct boxes shall be replaced with single duct VAV boxes, and the existing pneumatic thermostats shall be replaced with DDC. The low pressure ductwork downstream of the box shall remain, and the existing cold ducts upstream of the box shall be used as the new primary duct wherever possible.

Provide 2 air handling units for back-up capacity. Air handlers will need to be designed to be broken down and re-assembled in room as necessary to be installed in the existing basement mechanical room. Each air handling unit shall be provided with hot water pre-heat coils, and chilled water cooling coils. Each air handling unit shall have 100% economizer capability, with separate return/relief fans.

Roof mounted belt driven exhaust fans shall be provided for the restrooms, custodial closets, electrical rooms, copy rooms, elevator rooms and break rooms. Rooms with similar use, function, and schedule may be combined in the same fan systems. The exact number and location of the fans shall be determined during design. Exhaust ducts shall be routed to roof fans. Size fans and exhaust mains for additional 25% future capacity per University standards. Building exhaust fans shall be controlled via the BMS.

Outside air ventilation shall comply with ASHRAE Standard 62-1 2004. Outside air shall be controlled by carbon dioxide sensors to provide adequate ventilation, as well as improved energy efficiency. The systems shall be capable of 100% outside air and 100% relief air in economizer load. The number and location of fresh air inlets, and relief air outlets shall be determined during design.

All ductwork shall be insulated metal duct with volume dampers for all supply and exhaust diffusers or grilles. Classroom and office air distribution systems shall be designed to provide a quiet comfortable learning and working environment. Supply ductwork shall be routed to each floor through a central shaft from the mechanical room. Size the supply ductwork in the shaft large enough to accommodate for some additional future capacity, per the University's request. The same shaft shall be used for return. Return air in space shall be ceiling plenum return, with sound boots at grilles. Floor return, particularly on the fifth floor shall be evaluated by the design team as a possible option to achieve better temperature distribution in the space.

Building Controls Systems

The control system shall be an electronic DDC system tied into the central campus control system, either the Staeffa Talon front end, or the Johnson Metasys front end.

The air handling system shall be controlled by a DDC control system that is 100% integrated into the campus central control system. Building air handling system controls shall include air handler VFD control with duct static pressure re-set, air handler discharge temperature control and reset, VAV box space temperature and discharge temperature control, VAV minimum outside air re-set based on occupancy sensors, building static pressure control, outside air damper control, etc.

The heating system shall be controlled including remote BTUH/GPM monitoring, hot water re-set, hot water pump VFD speed with pressure re-set, etc. The cooling system shall be controlled with remote BTUH/GPM monitoring. Additional specifics of the controls system shall be coordinated with the University during design.

Plumbing Systems

Plumbing systems shall be designed to meet the International Plumbing Code as adopted by the State of Utah, D.F.C.M. Guidelines and University of Utah Design and Construction Standards.

Re-connect to existing domestic water main. Provide new building PRV station, and water meter with remote reading through the BMS.

Domestic Hot Water shall be provided by a shell and tube heat exchanger connected to the campus high temp water. The shell and tube heat exchanger shall circulate a domestic water storage tank per the University's design standards.

Plumbing fixtures shall be manufactured by the same source. Provide ADA compliant fixtures as required by code, and where called out in the individual space requirements. Provide water closets, sinks, lavatories, and any other fixtures as detailed in the individual space requirements. Faucets shall be sensor operated low flow (0.5 gpm), and shower heads shall be low flow (1.5 gpm). Water closet flush valves shall be dual flush. The additional maintenance considerations associated with waterless urinals seem to make them undesirable for the University on this project; however, as technology continues to develop, the design team shall re-evaluate the possibility of waterless urinals with the University during design. Ultra low flow urinals (pint flush) shall also be considered at that time. Coordinate with simulation lab for nurse's sink requirements.

Provide floor mounted service sinks and wall mounted hand sinks in the custodial closets indicated in the individual space requirements.

Provide mixing valves on ADA bathroom fixtures.

As required by the design, lavatories shall be either cabinet mounted or wall mounted self supporting fixtures,

Water closets shall be wall mounted flush valve type with elongated bowl and open front seat.

Floor drains shall be provided in all bathrooms, custodial closets, mechanical equipment rooms and laundry rooms.

Water treatment for the heating hot water and chilled water systems shall be provided and system shall match existing campus system. The University of Utah water treatment organization is West Water Treatment.

Exterior Hydrants shall be provided for hose connections.

Specialty Piping

Simulation lab is intended to be a representation of actual hospital work areas. Each mock patient bed shall have standard medical gas headwalls. Provide medical vacuum to each headwall, and provide regular compressed air to all other outlets for simulation of medical gas. Include nurse's alarm stations and emergency shut-off valves in a typical hospital type layout also for training. Air compressor and Vacuum shall be located in a dedicated room on the lower parking level.

Fire Protection Systems

Fire sprinkler protection shall be provided suitable for the building type and occupancy. The entire building shall be sprinkled. Re-connect to existing fire main. Verify size and capacity of existing fire main, and design system based on actual flow test at building. System shall comply with NFPA, Campus Fire Marshal and State of Utah Fire Marshal requirements.

Fire alarm main panels shall be installed by the main front entrance used by the fire department, and the exact placement shall be decided during design in conjunction with the campus Fire Marshal.

The fire sprinkler inspector's test shall be piped into a drain or sewer to prevent water damage.

The fire sprinkler inspector test shall be of the simulated sprinkler head type, and not the glass bulb type.

The fire alarm contractor shall provide a "dry" set of contacts to tie into the central campus annunciator panel.

All fire rated doors shall be supplied with a magnetic door hold open that is tied into the fire alarm system. Upon activation of a fire alarm or power failure, they shall release.

The contractor shall provide documentation of the acceptability of all fire-safing materials used.

Utilities

Water

Replace the existing 4" domestic water main to the building. Underground water service piping shall be type K wrapped copper and enter the building into a pressure reducing station and main building shut-off valve. All interior above grade water piping shall be type L copper. All culinary hot and cold water piping shall be insulated.

Provide interior water meters per University Standards for culinary hot and cold water at this building. Flow meters shall measure instantaneous flows (in gpm), as well as cumulative flows in (in gallons). Flow meter shall have a manual reading at the building, as well the ability to communicate readings via the central control system.

Fire riser shall be a new feed to the building and shall be tied into the existing fire line at building exterior.

Sewer

Provide a new 6" sewer main and tie into the existing 6" line adjacent to the building. Design team shall verify that the 6" line has the capacity to handle the new remodel of the College of Nursing building. Sewer piping shall be cast iron. No-hub piping is not allowed underground. Provide cleanouts as required by code.

Storm Drainage

Building roof drain piping shall surface drain. Roof drain piping inside the building shall be insulated. Primary and secondary roof drain system shall be provided. Roof drains shall be tied into campus storm drain system.

Sustainable Design - Mechanical and Plumbing

State of Utah High Performance Building Rating System

This project will be required to adhere to the State of Utah High Performance Building Rating System as it applies to remodel projects. See DFCM Design Requirements, High Performance Building Rating System for in depth descriptions of prerequisites and sustainability points. The intent is to use 1.5% of the construction budget for improved sustainability and energy efficiency measures. The following is a summary of mechanical and plumbing design requirements and possible credits to pursue in order to comply. Design team in conjunction with the owner shall make the final determination of exactly which credits to pursue.

Mechanical and Plumbing Prerequisites

3.1.D.a. New building envelope components shall be designed to be 10% better than ASHRAE 90.1-2004 minimum requirements.

3.1.D.c. Mechanical systems shall be designed to meet minimum performance based on ASHRAE90.1-2004.

5.5.A. DFCM shall engage a 3rd party commissioning agent.

5.5.B. Design decisions shall be made using life cycle cost analysis.

5.5.C. System shall be designed without CFC based refrigerants.

5.5.D. Ventilation system shall be designed in accordance with the most current adopted version of ASHRAE Standard 62. (currently 2004 ed)

5.5.E. Roof drains and any other plumbing or HVAC system drains shall be designed to avoid standing water around or in the building.

5.5.I. Filtration media shall be replaced prior to occupancy.

5.5.J. Thermal comfort systems shall be designed to comply with ASHRAE standard 55.

5.6.A. DFCM shall engage a 3rd party energy specialist to evaluate different energy saving measures, and coordinate these with the design team, commissioning agent, and possibly with available utility company energy credits. Items with a payback of less than 3-5 years are strongly encouraged, as long as they will be compatible with this building and the University's requirements.

Mechanical and Plumbing Potential Sustainability Credits:

5.7.B.2. Demand controlled ventilation using CO2 sensors. 1 point

5.7.C.1 On site renewable energy. Both solar water heating, and photovoltaic cells may be considered and evaluated with the owner and the design team as a means to provide a percentage of on site renewable energy. 1-2 points

5.7.D.2. Pollutant source control, including the following:
1. Source ventilation systems for areas such as copy rooms, janitorial rooms, etc. 1 point
2. Select particle arrestance filtration rated at 65 percent or better. 1 point

5.7.D.3. 1. Construction Indoor Air Quality Management Plan 1 point
2. Complete building flush with 100% outside air for 15 days prior to occupancy. 1 point

5.7.E. Additional Commissioning 2 points

5.7.F. Improve acoustical performance. Depending on level of testing and documentation, design system to limit noise from exterior sources, HVAC systems, and other sources. 1-2 points

5.7.I. Water Efficient Fixtures and Appliances (with the exception of waterless urinals per the University's request) 2 points

5.7.J. Provide energy metering for campus chilled water, campus high temp water, natural gas, domestic water, and other utilities as required by electrical and landscaping. 1 point

5.7.J.2. Provide continuous metering of equipment as specified in HPBRS including motor loads greater than 20 HP, variable speed drives, chilled water pumps, heating water pumps, outside air economizer, supply air static pressure and volume, etc. 1 point

LEED-CI
Mechanical and Plumbing Recommendations

If the University decides to pursue LEED – Commercial Interiors for this project, the following is a brief description of some mechanical and plumbing sustainable approaches that are required, and some recommended items that should be considered. Design team in conjunction with the owner shall make the final determination of exactly which credits to pursue.

LEED CI Prerequisites and Credits	Design Approach
Water Efficiency Credit 1.1: Water use reduction by 20%.	Use dual flush valves at water closets, low flow faucets and showers. Consider with University waterless or ultra-low flow urinals. Coordinate with HPB 5.7.I.
Energy and Atmosphere Prerequisite #1: Fundamental Commissioning	Engage a 3rd party commissioning agent per DFCM HPB pre-requisite.
Energy and Atmosphere Prerequisite #2: Minimum Energy Performance	All equipment shall be designed to meet or exceed current energy codes. Coordinate with DFCM requirements section 3.
Energy and Atmosphere Prerequisite #3: CFC Reduction in HVAC&R Equipment	All cooling equipment shall be designed and specified without CFCs. Coordinate with HPB 5.5.C.
Energy and Atmosphere Credit 1.3A: Optimize Energy Performance (minimum equipment efficiency, and appropriate zoning and controls)	All equipment shall be designed to meet more stringent energy requirements which exceed code minimums. Provide increased temperature control zoning. The University standard of individual temperature control for each office will come very close to meeting this requirement.
Energy and Atmosphere Credit 2: Enhanced Commissioning	Engage a 3rd party commissioning agent in the design phase of the project. Coordinate with HPB 5.7.E.

LEED CI Prerequisites and Credits	Design Approach
Indoor Environmental Quality Prerequisite #1: Minimum IAQ Performance	System shall be designed in compliance with ASHRAE 62.1 – 2004.
Indoor Environmental Quality Credit 1: Outside Air Delivery Monitoring	Include CO2 demand controlled ventilation and outside air measuring. Coordinate with HPB 5.7.B.2.
Indoor Environmental Quality Credit 3.1: Construction IAQ Management Plan, During Construction	General Contractor shall implement a construction IAQ management plan. Coordinate with HPB 5.7.D.3.
Indoor Environmental Quality Credit 3.2: Construction IAQ Management Plan, Before Occupancy	Prior to occupancy, building shall be flushed with outside air for 2 weeks to remove any contaminants from indoor air. Coordinate with HPB 5.7.D.3.
Indoor Environmental Quality Credit 6.2: Controllability of Systems, temperature and ventilation	Provide increased level of temperature control for individual occupants. Requirements resemble the University's individual office control standards and credit EA1.3.A.
Indoor Environmental Quality Credit 7.1: Thermal Comfort – Compliance	Design HVAC systems for optimal comfort ranges. Include automatic temperature controls. Coordinate with HPB 5.5.J.
Indoor Environmental Quality Credit 7.2: Thermal Comfort - Monitoring	Provide post-occupancy building survey of thermal comfort, and develop a plan to correct deficiencies that arise.

Electrical Systems Design Criteria

Codes which are applicable to the design of the electrical systems are listed below. Comply with each of the latest adopted publications.

- ADA, Americans with Disabilities Act
- ASHRAE 90.1 Energy Code
- DFCM, Division of Facilities Construction and
- Management, Design Criteria
- DFCM, High Performance Building Rating System
- EIA/TIA, Electronics Industries Association/ Telecommunications Industry Association
- IBC, International Building Code
- IESNA, Illuminating Engineering Society of North America
- NFPA, National Fire Protection Association (applicable sections including but not limited to):
  - NFPA 70, National Electrical Code
  - NFPA 72, National Fire Alarm Code
- UL, Underwriter=s Laboratories
- Utah State Fire Marshal Laws, Rules and Regulations
- University of Utah Design Standards

Power Distribution

Site Medium Voltage Service and Distribution:

The existing Nursing Building is currently fed from the old 7,200 V distribution system that is being phased out. New primary electrical service shall be delivered to the building from the campus 12,470 V distribution system. Abandon and remove the old 7,200 V service to the building and provide new 12,470 V service from an adjacent manhole that was installed from the Red Butte substation to the Health Science Education building located southeast of the Nursing Building. Provide a new 4-way switch in manhole to connect to existing feed to the HSEB and new feed to the Nursing Building. Having the new 12,470V distribution so closely available to the building provides a good opportunity to make the conversion from the old 7,200V system to the 12,470V system. Provide new transformers and VFI switch in a new transformer vault for the Nursing Building.

Low Voltage Service and Distribution:

The existing 120/208V secondary service and distribution for the building shall be replaced in its entirety. This effort will need to be phased to maintain power to portions of the building that will be operational during the demolition and construction activities. Service at 277/480V should be considered due to the size of the building and the fact that all mechanical equipment will be replaced.

The electrical service shall be sized for a minimum 10 watts/square foot for 277/480V loads and 5 watts/square foot for 120/208V loads, plus 50% spare growth capacity on each system.

Provide a new main electrical room located in the parking level adjacent to the transformer vault. The transformers shall deliver 120/208V and 277/480V service to new main switchboards. The main switchboards shall have Square D "Powerlogic" type digital metering to monitor all important electrical parameters of the building such as volts, amps, kVA, demand, power factor and harmonic distortion. This meter shall have the capability to be remotely monitored per campus standards. The switchboards shall have provisions to add breakers for future load growth. The main switchboards shall distribute power to the various branch panelboards for lighting, outlets and miscellaneous loads. For power quality, loads shall be separated into different feeders based on load type, such as motors, lighting and outlets.

Motor control centers shall be provided for areas where 3 or more motors are grouped. All 3-phase motors shall be provided with phase-loss protection.

Variable frequency drives shall be provided where required for mechanical equipment and be in compliance with DFCM and Campus requirements. The VFD's shall have filters to isolate the damaging harmonics from the electrical distribution system.

New branch panelboards shall be provided in new, vertically stacked electrical rooms. Locate the electrical rooms centrally as much as possible in order to make new and future circuit runs shorter and less costly. Also, consideration shall be given to the ease and accessibility of running new and future circuits out of each room. An area of each room shall be dedicated for current and future riser conduits or busways so that wall-mounted equipment will not impede vertical distribution. Panelboards serving normal lighting and appliance circuits shall be located on the same floor as the circuits they serve, making circuit identification and future work more convenient for the campus. Panelboards serving the 120/208V system shall be provided with insulated grounding bus bars, in addition to the equipment grounding bus, for equipment that requires an insulated/isolated grounding conductor. Provide at least 50% spare capacity for future growth and flexibility.

Outlet and lighting branch circuits shall be loaded to no more than 80% of what is allowed by NFPA 70. Dedicated circuits shall be provided where the load requires. On average, 6 outlets per circuit shall be used. No more than 4 computer terminals per circuit will be allowed. In some cases, fewer outlets shall be on a circuit as required by the loads. Each branch circuit homerun conduit shall have no more than 3 circuits. All 120V multi-wire branch circuits shall have a dedicated neutral conductor for each circuit.

Conductors shall be all copper and installed in raceways, minimum ¾" C. Branch circuits shall be sized to prevent voltage drop exceeding 3% at the farthest load. The total voltage drop on both feeders and branch circuits shall be designed to not exceed 5%. This will ensure that all equipment in the building operates most efficiently and minimize power quality problems relating to voltage drop.

Equipment and Furniture: Power shall be run to any equipment indicated in the program as requiring power. Power requirements will need to be given to the design team during the design to ensure that the proper power and conduit is run to the equipment.

A fault current and coordination study shall be performed by a licensed electrical engineer to indicate available fault current at all points in the distribution system. New equipment shall be adequately rated for the amount of available fault current. System coordination shall be studied, and fuses or breakers selected to ensure minimum system outage due to overloads or fault currents. The breakers shall be set with adjustable long time, short time, instantaneous and/or ground fault settings for optimum system coordination.

Power Quality and Reliability

With the many computers, audio/visual equipment and sensitive electronics that are planned for the building, it will be essential that the electrical system deliver clean, reliable power to the equipment. Failures due to poor power cannot be tolerated. The following measures shall be taken to ensure a high level of reliability and quality.

Transient voltage surge suppression (TVSS) and "noise" protection shall be provided at service equipment and on branch panelboards that serve computer terminals. To the greatest extent possible, TVSS units shall be integral to the panelboard or switchboard to ensure that lead lengths do not raise the clamping voltage and negate the use of the TVSS unit. The TVSS shall protect the sensitive electronics from disturbances that are generated inside or outside of the building.

Provide a Lightning Risk Assessment per the NFPA 780. The result of the evaluation will indicate if a lightning protection system is recommended. A system of lightning rods on the roof with down conductors to a counterpoise ground is proposed. The system shall have a UL Master Label and comply with NFPA 780.

Many power quality problems can be attributed to grounding. Poor grounding can cause equipment failures. The grounding system shall be installed per NFPA 70, DFCM and Campus requirements. An insulated equipment grounding conductor shall be provided in all feeder and branch circuit conduits. Other guidelines shall be followed, such as IEEE Standard 1100-1999, Power and Grounding Sensitive Electronic Equipment.

Outlets

The program space data sheets shall be used as a guideline for placing outlets, however, adjustments shall be made to suit the end users' needs during the design and review process with campus personnel. Where requirements cannot be identified, the following shall be used as a general guideline.

Classrooms, Lecture Halls and other Instructional Spaces: Provide outlets for instructor's station, audio/visual equipment and each student. Ensure that there is at least one outlet for each 10' of wall space. Provide floor outlets, poke-throughs or underfloor duct where stations or equipment cannot be served directly from the wall without crossing aisle space and where no access floor is provided.

Simulation Patient Rooms and Other Bed Locations: These rooms should be designed as if it were a hospital patient room. Provide multiple outlets at the head of bed (or a hard-wired connection to headwall unit with integral outlets) and around the room. Provide red-colored outlets intermittently to simulate availability of emergency power.

Student Commons Areas: Provide power outlets for laptop computers, at least one duplex for each group of 4 seats, but no less than one outlet per each 12' of wall space. Provide floor outlets where stations or equipment cannot be served directly from the wall without crossing aisle space.

Offices/Workstations: For each workstation, provide one outlet dedicated to computer terminals and one normal outlet, and one additional normal outlet for every 10' of wall space.

Conference Rooms: One outlet for every 10' of wall space, plus one outlet dedicated to computer terminals on two walls.

Lounges/Breakrooms: Outlets on dedicated circuits every 4' on counter top plus dedicated outlets for refrigerator, microwave, and disposal (switched at counter top), plus one outlet for every 10' of other wall space in room.

Counter tops (in general): One outlet every 4'; GFI where within 8' of a sink.

Restrooms/Shower Rooms: One GFI outlet near each lavatory counter top.

Corridors, Lobbies: Provide at least one outlet every 25', on alternating sides of the corridor or lobby.

Stairs: One outlet at the landing of each level.

Storage Rooms (small), Janitors Closets: One outlet.

Building Exterior: One WP/GFI outlet near each entrance.

Emergency Service and Distribution:

An emergency diesel generator shall be provided. It shall be sized to power the emergency lighting, fire alarm, elevators and other life safety loads in the building. It shall also serve stand-by (optional) loads such as data closets – equipment and cooling, and the security system. It is proposed that the generator be located in a room at parking level, with access via a lift-out hatch at grade level. The fuel tank shall be sized for a minimum of 18 hours at full load to keep the building operational during extended outages. Two transfer switches shall be used: one for life-safety loads and one for stand-by (optional) yet important loads. Metering and annunciation shall be provided at the generator, and interfaced with the building management system.

Lighting

Lighting - General:

The basis for design shall be the IES and its Recommended Practices, such as RP1-93 "Office Lighting", RP3-00 "Lighting for Educational Facilities", RP-20-98 "Lighting for Parking Facilities", and RP-33-99 "Lighting for Exterior Environments". For exterior lighting, indirect lighting, and other specialized task lighting, a point-by-point plot of illuminance establishing conformance with the Recommended Practices shall be furnished. Exterior lighting fixtures shall be full-cut-off type to minimize light trespass pollution. Energy-efficient lamps and ballasts shall be used to maximize energy conservation. Ballasts shall be 10% THD to minimize system harmonics. The amount of different lamp types shall be minimized, making replacement and maintenance easier. Lamps shall comply with EPA TCLP requirements.

ASHRAE 90.1 requirements shall be met and exceeded to meet the overall project requirement to beat this new energy code by at least 10%. Energy savings design techniques such as daylighting control, occupancy sensors, energy efficient lamps/ballasts shall be used where practical to maximize energy efficiency.

Parking, Pedestrian, and Street Lighting:

For the minimal amount of exterior lighting required on this project, building-mounted, low-glare HID luminaries compatible with the campus surroundings shall be used. Where required, new pole lights shall be added that comply with the new Campus standard light pole. Exterior lighting shall be controlled with a photocell/timeclock combination.

Interior Lighting:

In general, indirect lighting shall be used to the greatest extent possible for glare control in spaces where computer terminals are used. Where indirect lighting conflicts with other systems, such as projectors, then other low-glare fixtures shall be considered, such as recessed indirect luminaires. Rooms with audio/visual systems shall have lighting with variable lighting levels including a separate controlled zone to reduce glare and illuminance on the audio/visual display. In rooms with projectors, separate lighting control switches near the instructor position shall be installed for ease of controlling lighting during presentations. Any dimming shall be provided with fluorescent fixtures – incandescent fixtures should be minimized to the greatest extent possible. An A/V interface shall be incorporated in rooms with A/V equipment so that the lights can be controlled through the A/V system.

For spaces where glare control is not required, fluorescent, lay-in fixtures may be used. This includes corridors, workrooms, restrooms, common areas, equipment rooms and storage rooms. Recessed fluorescent downlights shall be used in areas where aesthetics call for an upgraded appearance, such as in main lobbies.

Existing lighting systems may remain in recently remodeled areas (new classrooms and conference rooms on 2nd floor, and partial 5th Floor). The existing Auditorium shall be provided with a new lighting system and controls consisting of dimmable cove lighting, downlighting, adjustable lighting for front of room and wall wash lights for front wall. Integrate the lighting controls with the upgraded audio/visual system that is also part of this project.

All interior lighting shall be controlled by some automatic means. This shall include occupancy sensors for smaller enclosed areas and timed relay control for larger areas. The corridors and common areas shall be controlled through the building management system with local wall switch override.

Exit and emergency lighting shall comply with the IBC. Emergency lighting for means of egress to 1 fc average, 0.3 fc minimum, shall be provided. Emergency lighting shall be included in restrooms, electrical rooms, and communication rooms.

The following table shall be used as a guideline in the lighting design for illuminance levels and control methods:

Interior Lighting

Task	Illuminance (fc)	Control
Classrooms with fixed audiovisual	0.25/50	Occupancy Sensor with dimmed, and switched zoned lighting
Computer Labs	15/50	Occupancy Sensor with Multi-level switching and zoned lighting
Conference Rooms (without fixed audiovisual)	15/50*	Occupancy Sensor with multi-level switching
Conference Rooms (with fixed audiovisual)	.25/50*	Variable lighting control, zoned lighting
Toilet Rooms	20	Occupancy sensors, unswitched emergency lighting
Storage, Active	30	Occupancy sensor and wall switch.
Storage Rooms, Inactive	10	Occupancy sensor and wall switch.
Stairways, Corridors	1/15	Unswitched emergency lighting, programmable lighting control for corridor lighting
Lobbies, Reception Areas General Lighting	30	Multiple Switches plus programmable lighting control.
Office Lighting	50	Occupancy Sensor with manual off.
Mechanical, Electrical	20	Switch for normal and emergency lighting
Janitorial	20	Occupancy Sensor
Exterior parking	1.0 fc average	Photocell/timeclock
Exterior walkways	0.5 average	Photocell/timeclock
Parking Structure	5 FC average	Timeclock with “always on” night lights.

* Maximize CRI for selected lamp type

Fire Alarm

Campus Fire Alarm and Life Safety:

An addressable/intelligent fire alarm system shall be provided, complying with Utah State Fire Marshall's "Rules and Regulations", U of U Campus fire marshal requirements and the ADA. The system shall be FCI by Nelson Fire as requested in the Campus guidelines, and shall be connected into the central fire alarm system.

Telecommunications Pathways

General

Comply with the latest University of Utah Design Standards for Communications Wiring Systems. This document is made part of this program by reference. Coordinate all design with the Campus Netcom department.

Site Service

Provide new (4) 4" duct bank into the building from an existing telecommunications manhole located to the southeast of the building. The existing 2" conduit duct bank can be left in place and used to the extent possible.

Riser Distribution

Stacked telecommunications closets shall be provided to serve each floor of the building. Coordinate size, equipment layout and wall space with the Campus Netcom department. Closets shall be located such that when cabling is routed through the raceway system provided, the distance will not exceed 290 feet to the furthest outlet. Provide a minimum of four 4" conduits from the MDF to the stacked IDF locations and four 4" sleeves between floors. If possible, stack the MDF below the IDF=s. Provide both normal and emergency circuits to each IDF, 3 each, with one fourplex per circuit. Twenty-four hour HVAC is required in each closet and shall be supplied with emergency power.

Horizontal Distribution

Provide a cable tray distribution network throughout each floor and into the IDF closets. Extend the cable tray around inside of the IDF closet to allow cables to be routed within the room. Consider ease of access to the tray system when the building is in full operation. Limit cable tray routing to be above corridors, common and similar areas. Where ceilings are exposed or inaccessible, then provide a bridge of equivalent conduit connecting the cable trays in the accessible ceiling areas. Do not load the cable tray and raceway system to more than 50% of what is allowed by cable fill requirements of NFPA 70.

Voice/Data Drops

Each voice/data outlet location shall consist of a 4" square box with mud ring and two ¾" conduits stubbed to the nearest cable tray. Locations will be coordinated with the users during design. As a minimum, provide one voice/data drop for each workstation, fax machine, copy machine, desk, computer terminal and teaching station. Where wireless networks are being considered for student access, still allow sufficient empty raceways for future hardwired connections should the wireless system have insufficient bandwidth for evolving applications.

Other Empty Conduit Systems

Provide empty conduit and boxes for other low-voltage signal and communications wiring systems that may be provided in this or other contracts, such as audio/visual systems.

System Commissioning

As part of the LEED and High Performance Building Rating System, commissioning will be an integral process of the design and construction. Participate fully with the Commissioning Agent during design, and specify that the electrical systems installers are part of the commissioning. As a minimum, the following systems shall be included in the commissioning process:

- Medium voltage equipment (transformers, switches, cables)
- Main switchgear
- Lighting Control Devices and Systems
- Generators and Transfer Switches
- Motor Controllers
- Variable Frequency Controllers
- Fire Alarm Systems
- Security Systems

Sustainable Design - Electrical

General

This project is under the requirements of the DFCM High Performance Building Rating System, and is also under consideration for LEED™ Certification. The following general areas shall be addressed in the electrical design in order to meet sustainable design criteria:

Light Pollution Reduction:

Design exterior lighting using full cut-off luminaires. Do not exceed 80% of the lighting power densities for exterior areas and 50% for building facades and landscape features as defined in ASHRAE/IESNA Standard 90.1-2004, Exterior Lighting Section.

Optimize Energy Performance:

The lighting power density for the project shall be at least 10% better than the requirements listed in ASHRAE/IESNA Standard 90.1-2004. The most energy efficient lamp and ballast combinations that are feasible for the project should be used. Give consideration for maintenance and lamp replacement according to campus standards shall. A variety of lighting control methods and lighting power reduction techniques shall be considered, based on type and use of each space, including the following:

1. Corridors and Common Areas: Provide a lighting relay control system that controls lights based on time of day occupancy. For after hours, override switches may be used that turn lights on for no longer than one hour at a time.

2. Enclosed Spaces (offices, conference rooms, equipment rooms, etc.): Provide occupancy sensors with local “off” override switches.

3. Daylighting Areas: For corridors and common areas with daylighting, provide indoor photocells to turn on/off artificial illumination, or to provide stepped switching based on the amount of natural daylighting available. For normally occupied interior spaces, consider the use of a photocell and continuous dimming.

4. Exterior Areas: Control exterior lighting through a photocell and timeclock combination. Campus environments should have a minimal level of security lighting throughout the dark night hours.

5. Task/Ambient Lighting: Energy consumption can be greatly reduced by reducing the ambient lighting and providing additional, separately controlled lighting for individual tasks.

Controllability of Lighting:

Maximize the use of lighting controls by ensuring that at least 90% of the occupants have individual controllability of lighting in their respective work area. Where open office furniture is used, then separately switched task lighting mounted in the systems furniture is preferred. For shared multi-occupant spaces, provide variable lighting controls to allow adjustment that meets group needs and preferences.

High Performance Building Rating System

The following specific areas shall be included in the electrical design to meet the requirements of the DFCM High Performance Building Rating System:

5.4.A (2): Participate in a Design Charrette to review requirements to consider new exterior lighting to be full cut-off to reduce night sky pollution. The campus standard light pole for east (medical) campus meets the full cut-off requirements.

5.5.B: Designer shall use life-cycle cost analysis in making decisions about products, services and construction to lower the State’s cost and to reduce energy.

5.5.G: Design shall design the lighting system according to the IESNA Lighting Handbook.

5.6.A: Participate in design meetings with the Energy Specialist who will model the energy consumption and reduction techniques considered for the building. Provide information that will allow the model to establish a baseline, and then energy reduction strategies to improve over the baseline. Consider all of the items discussed in the “General” section above, as well as any other opportunities that are presented or discussed.

5.6.B: While this building will exceed the 75,000 sq. ft. limit of the Prescriptive approach, the items listed in this section should all be considered to help reduce the overall energy and be included in the building energy model. These items include:

- Design lighting power density to be at least 10% savings over ASHRAE 90.1 allowances
- Use premium-efficiency T8 lamps and ballasts
- Provide daylighting/dimming controls: within 12' of windows and 8' of skylights
- Use occupancy sensors in all enclosed spaces
- Encourage at least 80% ceiling reflectance and 70% wall reflectance

5.7.A(1) a. Work together with the Architect to determine if daylighting can be provided to 40% or more of the space. Provide daylighting controls for all areas with natural daylighting.

5.7.C(1): Provide preliminary design and cost for on-site renewable energy, such as a photovoltaic system, to reduce energy use by 5%.

5.7.J(1): Provide digital metering for the electrical usage of the building. Provide data line connection to allow meter to be remotely monitored per Campus standards.

5.7.J(2): Provide separate sub-metering for lighting loads and motor loads to allow for system performance monitoring.

LEED for Commercial Interiors

The following specific areas shall be included in the electrical design to meet the requirements of LEED for Commercial Interiors (CI):

SS Credit 1, Option F – Light Pollution Reduction: Remove and replace any exterior lighting that does not comply with dark-sky requirements, or that exceeds the allowable lighting power densities to meet this credit. Use campus-standard full cut-off fixtures

EA Prerequisite 2: Comply with ASHRAE/IESNA 90.1-2004. Assist in the energy modeling effort to identify energy reduction measures and quantify energy efficiency over baseline model.

EA Credit 1.1: Optimize lighting energy performance by 15% - 35% below that allowed by ASHRAE/IESNA 90.1-2004. Utilize the most efficient sources feasible, while using products that are available and maintainable. Take care not to over-design lighting levels, and use the task-ambient approach to the extent possible.

EA Credit 1.2: Optimize energy performance by using daylighting controls in all regularly occupied spaces within 15 feet of windows and under skylights.

EA Credit 3, Case B: Provide separate sub-metering for lighting loads and motor loads to allow for system performance monitoring. Participate in the development of a Measurement and Verification plan.

EQ Credit 6.1: Provide lighting controls for at least 90% of occupants, enabling adjustments to suit individual task needs and preferences. For shared, multi-occupant spaces develop a shared lighting control system that meets the needs of the users and space.

Technology Systems Design Criteria

Codes which are applicable to the design of the technology systems are listed below. Comply with each of the latest adopted publications. They are part of this program by reference and are not restated in the program narrative.

- ADA, Americans with Disabilities Act
- DFCM, Division of Facilities Construction and Management, Design Criteria
- EIA/TIA, Electronics Industries Association/ Telecommunications Industry Association
- IBC 2000, International Building Code
- NFPA, National Fire Protection Association (applicable sections including but not limited to):
  - NFPA 70, National Electrical Code
  - NFPA 72, National Fire Alarm Code
- UL, Underwriter's Laboratories
- IEEE Compliance: Comply with applicable requirements of IEEE 208
- University of Utah Design Criteria
- Utah State Fire Marshal Laws, Rules and Regulations
- Standard Broadcast Wiring and Installation Practices", as excerpted from "Recommended Wiring Practices," Sound System Engineering, (2nd Edition), D. Davis
- The Basics of Audio and Visual Systems Design, Revised Edition, Ray Wadsworth / International Communications Industries Association, INC.

Structured Cabling Systems

General

Voice/data cabling (structured cabling systems) will include copper station cabling, copper and fiber backbones, all terminations, wall plates, patch panels, cross connects, racks and wire management systems.

Voice and data service will originate from the designated building demarcation, and will be comprised of a combination of category 3 copper cabling for voice, and single and multimode fiber for data. This cabling will terminate in the main telecommunications room, or MDF. From the MDF, a backbone of category 3 copper cable for voice, and a combination of multimode and single mode fiber cabling for data will be provided to each subsequent wiring room or IDF on each of the floors for voice and data signal distribution. From that point, horizontal cabling will be provided to each of the voice/data outlet workstation locations. All voice and data cabling systems will be furnished and installed by NETCOM.

Typical Voice/data Outlet

For non-teaching spaces, design each typical voice/data outlet with 3 each category 6, RJ45 data jacks. More or fewer outlets may be required to serve specific needs in specialty areas. In classroom and lab areas provide one each category 6, RJ45 data outlet for each student seat (unless directed otherwise by authorized institution personnel during the design process), and four each category 6, RJ45 data outlets at each teaching station. In any computer labs, design one each category 6, RJ45 data outlet for each computer station. All outlet wall plates shall be one gang with provisions for up to six RJ 45 jacks labeled to comply with institution standards. Match color of electrical devices. Cable each RJ45 data outlet with a 4 pair Category 6 cable. If systems furniture is installed coordinate location of 3 each RJ45 outlets with cabling for each workstation location.

Wireless Network

The building, and all immediately adjacent outdoor areas, will be provided with reliable wireless local area network coverage. Provide data outlets at Owner designated locations for wireless access points to cover all interior areas, as well as to "spill-out" into all immediately adjacent outdoor areas. Design wireless access point data outlet with one each category 6, RJ45 data jack mounted on a single gang wall plate.

Telephone Outlet

Design telephone outlets for pay phones, elevator panels, wall phones and other required uses. Install 4 pair Category 6 cable in a suitable plate for the application.

Voice And Data System Active Electronics And Passive Devices

All active voice and data system electronics including, but not limited to, Ethernet switches, routers, servers, PBX's, telephone set instruments etc… are not included in the scope of work for this project. These items will be provided from a separate budget, and are not part of the construction budget. All passive devices including, but not limited to cabling, termination devices, wall plates, patch panels, connectors, open frame equipment racks, cable runway, and cable management systems are part of the construction budget.

Security Systems

General

All security systems will comply with established campus standards. Systems will annunciate alarm conditions to, and be completely monitored by, the campus police department. Use only security vendors and installer that are pre-approved by the University of Utah.

Card Access

A complete access control system will be specified to control entry to all perimeter entry/exit points, and at select sensitive interior spaces. The Simulations Suites will require card readers at entrances to the Suites, at the Control Rooms and at Storage rooms containing high-cost or sensitive equipment. Card readers will be the proximity type, and will comply with established campus standards. Card readers will report to central door controllers. Coordinate door hardware to minimize the aesthetic impact to the appearance of the building.

Video Surveillance

A complete video surveillance system will be specified to provide for visual monitoring throughout the existing parking structure, at all building entry/exit points, at select main building thoroughfares, elevator lobbies, at entrances to simulation suites, inside the simulator control room, inside the simulator storage room, and at select sensitive interior areas as identified on the room data sheets. Cameras will be specified for viewing of owner designated subject areas, and installed in appropriately rated enclosures. Signals from cameras will be connected to a central switching/multiplexing system with minimum 17" video monitors for viewing. All camera images will be digitally recorded by DVR's that are local area network accessible.

Intrusion Detection

A complete intrusion detection system will be specified for electronic monitoring and status reporting of all building entry/exit points, select building thoroughfares, and at select sensitive interior areas. Sensing devices will include door position switches, motion sensors, and where/if appropriate, glass break sensors. All sensing devices will report to a zoned monitoring panel for specific location identification of an alarm condition. The intrusion detection system will be integrated with the video surveillance system for priority viewing of security breach areas.

Emergency Phones

Emergency (Blue Light) telephones will be specified. Provide density and alarm annunciation based on established campus standards. At a minimum, without implying limitation, locate emergency telephones throughout the existing parking structure, and throughout the building site pedestrian areas.

Audio And Video Systems

General

Audio and video systems will be specified for installation as part of the building construction budget, to be completed with all building trades. Audio and video systems will be specified for designated rooms in full compliance with established campus standards. Audio and video systems in all designated rooms will be similar in design, function and operation to facilitate user friendly operation by faculty from room to room.

Existing Classrooms

Two existing classrooms are equipped with U of U Health Sciences Education Building standard classroom AV systems. The AV systems in these classrooms will remain intact and fully operational as they are now configured. In addition, the AV systems in these existing classrooms will be augmented with new video conferencing systems for distance education. The distance education equipment will include microphones for the students and instructor, cameras for the students and instructor, and supplementary video monitors for the students and instructor. Each room will be provided with the capability for connection to the Utah Educational Network. In addition, each room will be provided with a CODEC for individual and simultaneous connection to distant locations. Existing classroom AV equipment will be modified, upgraded, and supplemented only as necessary to accommodate the addition of the distance education AV equipment.

Existing Lecture Hall

The existing lecture hall is equipped with an AV system that is not compliant with the current U of U Health Sciences Education Building standards for lecture halls. The existing lecture hall system will therefore be replaced with a lecture hall AV system that is fully compliant with these standards. In addition, the standard lecture hall AV system will be supplemented with a distance education system.
The new AV system in the lecture hall will be provided with fully integrated audio, video, and control systems. The audio system will amplify the spoken word from presenters, as well as amplify program audio originating from media source playback devices such as computers and DVD players. The spoken word originating from presenters will be captured using wireless, lapel microphones and lectern-mounted gooseneck microphones. Once captured, the audio signal will be processed and amplified to a speaker system.

The Existing Lecture Hall will be provided with a U of U Health Sciences Education building standard teaching station (lectern). Several media source devices will be provided and housed at each lectern. These devices will include, but not be limited to, two permanent computers, inputs for one portable computer, a DVD/VCR, a document camera, and audio/video/data sources originating from outside the classroom. Audio originating from these source devices will be selected, processed, and amplified to a speaker system. In compliance with the Americans with Disabilities Act, a fixed wireless assisted listening system will be provided.

Provide video systems for the large screen display of subject matter. Size projection screens using industry-wide accepted mathematical formulas appropriate for the nearest and furthest viewers. Locate projection screens in close coordination with seating layouts to assure appropriate viewing sight lines. Provide native 16:9 projectors with a minimum native resolution of 1366 X 768. As with screen sizing, utilize industry-wide accepted mathematical formulas to calculate the required light output for each projector to assure that images will not be “washed out” by ambient room lighting. Include all video system calculations in the construction drawings.

Provide two projectors and two 16:9 format, electric roll-up, tensioned cabled projection screens with the ability to display different images on the screens simultaneously. In addition, provide the ability to write electronically over one of the projected images (annotation).

Distance education equipment will also be provided including, but not limited to, microphones for the students and instructor, cameras for the students and instructor, and supplementary video monitors for the students and instructor. The lecture hall will be provided with the capability for connection to the Utah Educational Network. In addition, the lecture hall will be provided with a CODEC for connection to distant locations.

Equip the lecture hall with an integrated control panel for control of all audio and video system components, lighting systems, and motorized window coverings (where applicable). To meet this need, a touch screen control panel will be provided. The touch screen control panel will serve as the control panel, lectern monitor, and the annotation input device. Specify control system manufacturers in compliance with established campus standards. The touch screen control panel will be programmed in full compliance with the end user's desired button layout, configuration, and labeling. In addition, macros (multiple events) will occur when a button on the touch panel is engaged.

Conference Rooms

Conference rooms will be provided with very basic audio and video systems. Provide a single, smaller scale, 16:9 format projector and electric roll-up, tensioned cabled projection screen permanently mounted in each room. Size projection screens using industry-wide accepted mathematical formulas appropriate for the nearest and furthest viewers. Locate projection screens in close coordination with seating layouts to assure appropriate viewing sight lines. Provide projectors with a minimum native resolution of 1366 X 768. As with screen sizing, utilize industry-wide accepted mathematical formulas to calculate the required light output for each projector to assure that images will not be "washed out" by ambient room lighting. Include all video system calculations in the construction drawings.

Provide a small audio system for the playback of portable media source audio only. Provide wall or floor mounted computer video, composite video and S-video inputs, with their associated audio signals, to the permanently mounted projector. Resident source devices are not required in these rooms. Provide a simple wall-mounted control system to lower the screen, power the projector, select the projector input, and control the sound system volume.

Simulation Learning Center

A vendor will furnish and install simulation mannequins, and related computer and control equipment as part of the FF&E budget. The work of this contract will include all required simulation suite raceway systems needed to support the mannequins and related equipment, beds, and control equipment throughout the exam rooms and simulation suite control room.

In addition, the work of this contract includes the furnishing and installation of three cameras and one microphone in all exam rooms. The required camera positions are: At the head of the bed, the side of the room, and the front of the room. The microphone is to be positioned in the center of the ceiling. Provide color, pan/tilt/zoom cameras with a minimum 480 lines of resolution, 1/3 CCD, and 2 lx minimum illumination. Include a camera remote control system to select, position, zoom, and focus cameras. Provide a flush-mounted, omni-directional, condenser, boundary type microphone for voice pickup.

Each exam room also includes a de-briefing room. The work of this project includes the furnishing and installation of an approximate 52" LCD monitor in each de-briefing room. Each monitor will be wall mounted, with raceway systems provided to an input connection panel located at receptacle level for connection to local computer systems.

All simulation suite rooms will be provided with a hospital grade nurse call system. The nurse call system will provide for emergency call, two-way communication, and patient monitoring. Include individual room pull-stations/communication systems, and nursing station control systems.

Paging System

Provide an overhead paging system on the 1st floor. Set up speaker zones to segregate appropriate areas for minimal disruption of building operations. At a minimum, without implying limitation, segregate speaker systems into zones for the simulation suite, waiting and thoroughfare areas, and classroom corridors.

Design the paging system to accept voice pages which originate from any telephone set upon correct DTMF code entry. Provide the ability for speaker zones to be selected via DTMF code entry from any telephone set.

TV Distribution System

The campus TV distribution system will be extended into the College of Nursing Building. An RF TV distribution system will be provided for distribution of campus audio and video signals throughout the building. The TV distribution system will be provided with cable, amplifiers, splitters, directional couplers, terminators, outlets, and connectors. The system will be the broadband type, for distribution of low resolution, modulated audio and video signals onto a carrier frequency. A minimum 750 MHz bandwidth will be specified, and all outlets will be provided with between +5 and +10 dBu at each building television outlet.

Clock System

The campus clock system will be extended into the College of Nursing Building. Provide distribution amplification for the campus central clock controller signal throughout the building. Connect clock correcting signal to each building clock in compliance with the manufacturers written instructions. Provide minimum 12" analog clocks driven by self-starting, permanently lubricated, sealed synchronous motors, and equipped with sweep second hands and correcting solenoid actuators. Power all clocks locally from 120 VAC. Battery operated clocks are not acceptable.

General Sustainable Design Criteria

State of Utah
High Performance Building Rating System

This project will be required to adhere to the State of Utah High Performance Building Rating System as it applies to remodel projects. See DFCM Design Requirements, High Performance Building Rating System for in depth descriptions of prerequisites and sustainability points. The intent is to use 1.5% of the construction budget for improved sustainability and energy efficiency measures. The following is a summary of design requirements and possible credits to pursue in order to comply. Design team in conjunction with the owner shall make the final determination of exactly which credits to pursue.

The Design Team and DFCM should conduct a Design and Technology Charrette at the beginning of design to review the requirements of the standard and strive for an integrated design of energy efficiency and environmental measures. Specifically for this project, the charrette shall also consider sustainable site design including:

- Reuse of existing building to conserve our resources;
- Use local building materials and products to support local economy and reduce the environmental impacts from transportation;
- Encourage the use of public transportation;
- Provide recycling center.

Prerequisites

Fundamental Building Systems Commissioning
DFCM may engage a Commissioning Agent that is not an individual directly responsible for project design or employed by one of the designers. Commissioning Agent shall ensure that fundamental building components are installed and calibrated to operate as intended.

Life-Cycle Cost Analysis: The Design Team shall use life-cycle cost analysis in making decisions about their investments in products, services, construction, and other projects to lower the State Government's costs and to reduce energy and water consumption.

CFC Reduction in HVAC and Refrigeration Equipment: The Design Team shall select HVAC and refrigeration equipment without chlorofluorocarbons (CFC) based refrigerants.

Ventilation Systems: Designer shall provide mechanical ventilation system according to Standard 62. Mechanical ventilation system shall have the capability Design Requirements – 020608 75 to operate continuously during occupancy and designed not to be easily shut-down or otherwise defeated, such as blocked registers.

Fundamental Lighting Design: Designer shall design the lighting system according to IESNA Lighting Handbook.

Mold Prevention during Construction: Contractor shall ensure porous type building materials, such as wood, insulation, paper, and fabric, is kept dry to prevent the growth of mold and bacteria. Materials that have been affected by mold shall be abated or replaced. Building insulation that is damp or wet for 72 hours shall be replaced.

Filtration Media Replacement before Occupancy: Contractor shall ensure that filtration media is replaced before occupancy.

Thermal Comfort: The Design Team shall ensure that thermal comfort requirements are meet according to Standard 55.

Building Envelope: New building envelope components shall be designed to be 10% better than ASHRAE 90.1-2004 minimum requirements.

Mechanical Systems: Mechanical systems shall be designed to meet minimum performance based on ASHRAE90.1-2004.

Drainage Systems: Roof drains and any other plumbing or HVAC system drains shall be designed to avoid standing water around or in the building.

3rd Party Energy Specialist: DFCM shall engage a 3rd party energy specialist to evaluate different energy saving measures, and coordinate these with the design team, commissioning agent, and possibly with available utility company energy credits. Items with a payback of less than 3-5 years are strongly encouraged, as long as they will be compatible with this building and the University's requirements.

Energy Performance: Participate in design meetings with the Energy Specialist who will model the energy consumption and reduction techniques considered for the building. Provide information that will allow the model to establish a baseline, and then energy reduction strategies to improve over the baseline. Consider all of the items discussed in the "General" section above, as well as any other opportunities that are presented or discussed.

While this building will exceed the 75,000 sq. ft. limit of the Prescriptive approach, the items listed in this section should all be considered to help reduce the overall energy and be included in the building energy model. These items include:

- Design lighting power density to be at least 10% savings over ASHRAE 90.1 allowances
- Use premium-efficiency T8 lamps and ballasts

• Provide daylighting/dimming controls: within 12' of windows and 8' of skylights
• Use occupancy sensors in all enclosed spaces
• Encourage at least 80% ceiling reflectance and 70% wall reflectance

Sustainability Credits

5.7.A(1) a. - Work together with the Architect to determine if daylighting can be provided to 40% or more of the space. Provide daylighting controls for all areas with natural daylighting. 2-6 Points

5.7.B.2 - Demand controlled ventilation using CO2 sensors. 1 Point

5.7.C.1 - On site renewable energy. Both solar water heating, and photovoltaic cells may be considered and evaluated with the owner and the design team as a means to provide a percentage of on site renewable energy. Provide preliminary design and cost for on-site renewable energy, such as a photovoltaic system, to reduce energy use by 5%.
1-2 points

5.7.D.1 - Indoor Air Quality Credits: Low-Emitting Materials. The Design Team shall select adhesives and sealants, paints and coatings, carpet, and composite woods with low-emitting materials.

Select adhesives and sealants that meet USGBC LEED™NC, Credit 4.1, requirements. 1 Point

Select paints and coatings that meet USGBC LEED™ -NC, Credit 4.2, requirements. 1 Point

Select carpets that meet USGBC LEED™ - NC, Credit 4.3, requirements. 1 Point

Select composite woods that meet USGBC LEED™ - NC, Credit 4.4, requirements. 1 Point

5.7.D.2 - Pollutant source control, including the following:

1. Source ventilation systems for areas such as copy rooms, janitorial rooms, etc. 1 point

2. Select particle arrestance filtration rated at 65 percent or better. 1 Point

5.7.D.3.1- Construction Indoor Air Quality Management Plan .1 Point

Complete building flush with 100% outside air for 15 days prior to occupancy. 1 Point

5.7.E - Additional Commissioning. 2 Points

5.7.F - Improve acoustical performance. Depending on level of testing and documentation, design system to limit noise from exterior sources, HVAC systems, and other sources. 1-2 Points

5.7.G - Sustainable Material Credits: Recycled Content. Designer shall select building products that have incorporated recycled-content in major materials from the Construction Products category of the US Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines. Major materials include parking areas, floor, roof, partition, walls, or serving a structural function throughout the building.

1 Point - Four to seven major materials with recycled-content.
2 Points - Eight or more major materials with recycled-content.

5.7.H - Waste Reduction Credits: Site Waste Reduction. Contractor shall ensure that construction waste, demolition, and land clearing waste are recycled, composted, and salvaged. "Recycle Rate" is the ratio of recycled waste (by weight) to total waste (by weight).

1 Point - Recycle Rate of 50 to 74 percent.
2 Points - Recycle Rate of 75 percent or greater.

5.7.I - Water Efficient Fixtures and Appliances (with the exception of waterless urinals per the University's request) 2 points

5.7.J.1 - Provide energy metering for campus chilled water, campus high temp water, natural gas, domestic water, and other utilities as required by electrical and landscaping. Provide digital metering for the electrical usage of the building. Provide data line connection to allow meter to be remotely monitored per Campus standards. 1 point

5.7.J.2 - Provide continuous metering of equipment as specified in HPBRS including motor loads greater than 20 HP, variable speed drives, chilled water pumps, heating water pumps, outside air economizer, supply air static pressure and volume, etc. Provide separate sub-metering for lighting loads and motor loads to allow for system performance monitoring. 1 Point

LEED for Commercial Interiors

The following specific areas shall be included as part of the Design Team's analysis for achieving LEED Certification for Commercial Interiors (CI). The Design Team in conjunction with the owner shall make the final determination of exactly which credits to pursue.

Sustainable Sites

SS Credit 1 - Option F - Light Pollution Reduction: Remove and replace any exterior lighting that does not comply with dark-sky requirements, or that exceeds the allowable lighting power densities to meet this credit. Use campus-standard full cut-off fixtures.

SS Credit 3.1 - Alternative Transportation, Public Transportation Access: Building is located within ½ mile of commuter rail/1/4 mile of two or more public or campus bus lines usable by tenant occupants.

SS Credit 3.2 - Alternative Transportation, Bicycle Storage and Changing Rooms: Provide secure bike storage with convenient shower facilities for 5% or more of the tenant occupants.

SS Credit 3.3 - Alternative Transportation, Parking Availability: No new parking will be added for rehabilitation of the building.

Water Efficiency

WE Credit 1.1 - Water use reduction by 20%: Use dual flush valves at water closets, low flow faucets and showers. Consider with University waterless or ultra-low flow urinals. Coordinate with HPB 5.7.I.

Energy and Atmosphere

EA Prerequisite 1 - Fundamental Commissioning: Engage a 3rd party commissioning agent per DFCM HPB pre-requisite.

EA Prerequisite 2 - Minimum Energy Performance: Comply with ASHRAE/IESNA 90.1-2004: Assist in the energy modeling effort to identify energy reduction measures and quantify energy efficiency over baseline model. All equipment shall be designed to meet or exceed current energy codes. Coordinate with DFCM requirements section 3.

EA Prerequisite 3 - CFC Reduction in HVAC&R Equipment: All cooling equipment shall be designed and specified without CFCs. Coordinate with HPB 5.5.C.

EA Credit 1.1 - Optimize Energy Performance-Lighting Power: Optimize lighting energy performance by 15% - 35% below that allowed by ASHRAE/IESNA 90.1-2004. Utilize the most efficient sources feasible, while using products that are available and maintainable. Take care not to over-design lighting levels, and use the task-ambient approach to the extent possible.

EA Credit 1.2 - Optimize Energy Performance-Lighting Controls: Optimize energy performance by using daylighting controls in all regularly occupied spaces within 15 feet of windows and under skylights.

EA Credit 1.3A - Optimize Energy Performance-HVAC (minimum equipment efficiency, and appropriate zoning and controls): All equipment shall be designed to meet more stringent energy requirements which exceed code minimums. Provide increased temperature control zoning. The University standard of individual temperature control for each office will come very close to meeting this requirement.

EA Credit 2 - Enhanced Commissioning: Engage a 3rd party commissioning agent in the design phase of the project. Coordinate with HPB 5.7.E.

EA Credit 3, Case B - Energy Use, Measurement and Payment Accountability: Provide separate sub-metering for lighting loads and motor loads to allow for system performance monitoring. Participate in the development of a Measurement and Verification plan.

EA Credit 4 - Green Power: Provide at least 50% of tenant's electricity from renewable sources by engaging in at least a two-year renewable energy contract.

Materials and Resources

MR Prerequisite 1 - Storage and Collection of Recyclables: Provide easily accessible areas through-out the building dedicated to the collection and storage of non-hazardous materials for recycling.

MR Credit 1.1 - Tenant Space, Long Term Commitment: The College of Nursing is a "long-term tenant" of this University of Utah Building, (minimum of a 1- year commitment).

MR Credit 1.2 - Building Re-Use / Maintain 40% of Interior Non-Structural Components: Maintain at least 40% by area of the existing non-shell, non-structural components (walls, flooring and ceilings).

MR Credit 2.1 - Construction Waste Management, Divert 50% from Landfill: Develop and implement a construction waste management plan, quantify material diversion goals. Recycle and/or salvage at least 50% of construction, demolition and packaging debris.

MR Credit 2.2 - Construction Waste Management, Divert 75% from Landfill: Develop and implement a construction waste management plan, quantify material diversion goals. Recycle and/or salvage at least 75% of construction, demolition and packaging debris.

MR Credit 3.1 - Resource Reuse, 5%: Use salvaged, refurbished or reused materials for at least 5% of building (construction) materials, excluding furniture and furnishings.

MR Credit 3.2 - Resource Reuse, 10%: Use salvaged, refurbished or reused materials for at least 10% of building (construction) materials, excluding furniture and furnishings.

MR Credit 3.3 - Resource Reuse, 30% Furniture and Furnishings: Use salvaged, refurbished or used furniture and furnishings for 30% of the total furniture and furnishings.

MR Credit 4.1 - Recycled Content, 10% (post consumer +1/2 Pre-consumer): Use materials, including furniture and furnishings, with recycled content such that the sum of post consumer recycled content plus one-half of the post-industrial content constitutes at least 10% of the total value of the materials of the project.

MR Credit 4.2 - Recycled Content, 20% (post consumer + ½ Pre-consumer): Use materials, including furniture and furnishings, with recycled content such that the sum of post consumer recycled content plus one-half of the pre-consumer content constitutes at least 20% of the total value of the materials of the project.

MR Credit 5.1 - Regional Materials, 20% Manufactured Regionally: Use minimum of 20% of the combined value of construction and Furniture materials and product that are manufactures regionally within a radius of 500 miles.

MR Credit 5.2 - Regional Materials, 10% Extracted and Manufactured Regionally: In addition to the requirements of MR 5.1, use a minimum of 10% of the combined value of construction and furniture materials and products extracted, harvested or recovered, as well as manufactured, within 500 miles of the project.

MR Credit 6 - Rapidly Renewable Materials: Use rapidly renewable construction and furniture materials and products, made from plants that are typically harvested within a 10-year shorter cycle, for 5% of the total value of all materials and products used in the project.

MR Credit 7 - Certified Wood: When using new wood-based products and materials, use a minimum of 50% that are certified in accordance with the Forest Stewardship Council's Principles and Criteria.

Indoor Environmental Quality

EQ Prerequisite 1 - Minimum IAQ Performance: System shall be designed in compliance with ASHRAE 62.1 – 2004.

EQ Prerequisite 2 - Environmental Tobacco Smoke Control: Provide a smoke-free environment.

EQ Credit 1 - Outside Air Delivery Monitoring: (Including CO2 control and outside air measuring station). Include CO2 demand controlled ventilation and outside air measuring. Coordinate with HPB 5.7.B.2.

EQ Credit 3.1 - Construction IAQ Management Plan, During Construction: General Contractor shall implement a construction IAQ management plan. Coordinate with HPB 5.7.D.3.

EQ Credit 3.2 - Construction IAQ Management Plan, Before Occupancy: Prior to occupancy, building shall be flushed with outside air for 2 weeks to remove any contaminants from indoor air. Coordinate with HPB 5.7.D.3.

EQ Credit 4.1 - Low Emitting Materials, Adhesives and Sealants: All materials, (adhesives, sealants and primers), used in the building interior, must not exceed allowable requirements.

EQ Credit 4.2 - Low Emitting Materials, Paints and Coatings: All materials, (paints and coatings), used in the building interior, must not exceed allowable requirements.

EQ Credit 4.3 - Low Emitting Materials, Carpet Systems: All materials, (carpet systems), used in the building interior, must meet or exceed the Carpet and Rug Institute's Green Label Plus testing and product requirements.

EQ Credit 4.4 - Low Emitting Materials, Composite Wood and Laminate Adhesives: Composite wood and agri-fiber product, including core materials, must contain no added urea-formaldehyde resins. Laminate Adhesives used to fabricate on-site and shop applied assemblies containing these laminate adhesives must contain no urea-formaldehyde.

EQ Credit 4.5 - Low Emitting Materials, Systems Furniture and Seating: All systems furniture and seating introduced into the project space that has been manufactured, refurbished or refinished within one year prior to occupancy to be Greenguard Indoor Air Quality Certified.

EQ Credit 5 - Indoor Chemical and Pollutant Source Control: Employ permanent entryway systems to capture dirt, particulates from entering the building at all high-volume exterior entryways.

EQ Credit 6.1 - Controllability of Systems, Lighting: Provide lighting controls for at least 90% of occupants, enabling adjustments to suit individual task needs and preferences. For shared, multi-occupant spaces develop a shared lighting control system that meets the needs of the users and space.

EQ Credit 6.2 - Controllability of Systems, temperature and ventilation: Provide increased level of temperature control for individual occupants. Requirements resemble the University's individual office control standards and credit EA1.3.A.

EQ Credit 7.1 - Thermal Comfort – Compliance: Design HVAC systems for optimal comfort ranges. Include automatic temperature controls. Coordinate with HPB 5.5.J.

EQ Credit 7.2 - Thermal Comfort - Monitoring: Provide post-occupancy building survey of thermal comfort, and develop a plan to correct deficiencies that arise.

Innovation in Design

ID Credit 1. - Innovation in Design: Utilize a LEED Accredited Professional.

Individual Space Outline 05

Space Program and Area Summary

The information included in the Space Program and Area Summary on the following pages was obtained through interviews with departments/groups identified by the College of Nursing. The information has been verified and is intended to become the foundation for subsequent phases of design.

The spreadsheet on the following pages is categorized into the following: Building Levels; Departments/grouping; Function Area (room type); Description (of area); Notes; Occupancy per room; Square-foot per person; Net-Assignable-Square-Footage (NASF); Quantity of rooms; and total Program NASF for each room type as well as for the each level of the College of Nursing Building. Room quantities include both current needs and projected future growth. Total Building Net Square-Footage (NSF) and the Total Building Gross Square-Footage (GSF) are detailed on the following page. GSF includes an efficiency factor of 68% for all levels, which was determined with the proposed Test-Fit plan.

Initial programming exercises yielded a list of spaces that would require an amount of space greater than the amount available in the existing building. A list of spaces considered, but ultimately not included in the final Space Program is included in Appendix E for documentation.

University of Utah College of Nursing
SUMMARY
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March 20, 2008

	Existing GSF	Department/Division/Function	Gross Square Feet	# Private Offices Current	# Private Offices GROWTH	# Work Stations Current	# Work Stations GROWTH	# Shared 2-Person Offices Current	# Shared 2-Person Offices GROWTH	# Shared 4-Person Offices Current	# Shared 4-Person Offices GROWTH
Level 1	16,700 GSF	Simulation Learning Center	16,965 GSF	1	0	4	1	0	0	0	0
Level 2	17,300 GSF	Classrooms, Student Spaces, Student Services	17,463 GSF	7	1	3	1	0	0	0	0
Level 3	17,300 GSF	HSCBC ,Faculty Practice and IT	17,662 GSF	29	12	2	0	4	4	4	2
Level 4	17,300 GSF	Administration and Acute and Chronic Care	16,772 GSF	35	7	7	2	0	0	0	0
Level 5	18,700 GSF	Research	18,735 GSF	11	12	0	0	0	0	2	0
	87,300 GSF		87,597 GSF	83	32	16	4	4	4	6	2

Aditional Programmed Space
Storage -Receiving: 350 NSF Parking Level

Archive Storage:

University of Utah College of Nursing
Level 1: Simulation Learning Center
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Program of Spaces
March 20, 2008

	Function Area		Space Name	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
A.	**High Fidelity Function**									
1	Simulator Rooms	a.	Adult Simulators, Neonatal Simulators, Child Simulators, Infant Simulators, Maternity Simulators		Room for simulator on bed, 2-4 students, and support equipment such as bed-side terminals. Provide dispensing system in each room. 1 room to be set up as critical care with crash cart, PAK System, X-Ray. Provide sink, compressed air (not O2) and suction to all of the Sim Rooms.			200	10	2,000
2	Control Room	a.	Simulator Control Room		Room for simulation control equipment, video and recording capabilities, observation of sim rooms. 1 Control Room to monitor 5 Sim Rooms	9	20	180	2	360
3	Procedure Room	a.	Procedure Room		Rooms should be located near the Critical Care Room and Neonatal Sim Room (Once these rooms are assigned)	10	20	200	2	400
4	Storage	a.	Simulator Storage		Storage for simulator support parts and accessories			180	1	180
		b.	Medication Storage		Storage for meds.			80	2	160
B.	**Lower Fidelity Functions**									
1	Lower Fidelity Training	a.	Medical Surgery Floor-Adults	6 Pods of 4 beds each	Area for 1 patient bed for use by mannequin, 2 students each bed, suction, compressed air, storage for linen. Provide 2 sinks for each 3 Pods, Provide Pod arrangement with central observance area; 6 Pods with 4 beds each.			175	24	4,200
		b.	Pediatrics	Private Room	Room for 1 patient bed for use by mannequin, 2 students each bed, sink, compressed air, storage for linen.			180	1	180
		c.	Maternity	Private Room	Room for 1 patient bed for use by mannequin, 2 students each bed, sink, compressed air, storage for linen.			180	1	180
		d.	Practice Room	Private Room	Room for 1 patient bed for use by real patients, 2 students each bed, sink, compressed air, storage for linen. This room will be used by students to practice, when classes are taking place in other rooms.			180	2	360
2	Procedure Room	a.	Procedure Room		Rooms for demonstration and practice of procedures	10	25	225	2	450
3	Prep/Debriefing Classrooms	a.	Prep/Debriefing Classrooms		Prep/Debriefing Room for 8-10 students.	12	24	288	2	576
4	Storage	a.	Mannequin Storage		Storage for simulator mannequin parts and accessories			180	1	180

University of Utah College of Nursing
Level 1: Simulation Learning Center
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Program of Spaces
March 20, 2008

	Function Area		Space Name	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
C.	**Simulation Learning Center Support Spaces**									
1	Nurses Station	a.	Nurses Station		Nurses Station configuration with storage cubbies.	4	50	200	2	400
2	Offices	a.	Receptionist/Control Desk		Reception Desk--with built in storage for physical assessment kits that can be checked in/out by receptionist	1	150	150	1	150
		b.	Reception Waiting Area		Open Seating	6	25	150	1	150
		c.	Manager	Private Office	Office can be located on 3rd or 4th floor	1	120	120	1	120
		d.	Lab Coordinators	Work Station	Located at Nurses Station	0	0	0	2	0
		e.	Technician	Work Station	Located in Control Rooms	0	0	0	1	0
		f.	GROWTH	Work Station	Located at Nurses Station	0	0	0	1	0
3	Student Support	a.	Student Changing Rooms and Restrooms/Janitor		Restrooms/Changing Rooms/Lockers for personal belongings			425	2	850
4	Utility	a.	Clean (Linen)					100	2	200
		b.	Soiled (Laundry)					120	2	240
		c.	Electrical and Telecomm					200	1	200
					Program Total NSF					11,536
					Program Total GSF (ASF / 0.68 Efficiency)					16,965

Office Count Summary Simulation Learning Center (Accommodated in Program)	Total
# Private Offices Current	1
# Private Offices GROWTH	0
# Work Stations Current	4
# Work Stations GROWTH	1
# Shared (2 pers.) Offices Current	0
# Shared (2 pers.) Offices GROWTH	0
# Shared (4 pers.) Offices Current	0
# Shared (4 pers.) Offices GROWTH	0

University of Utah College of Nursing
Level 2: Classrooms, Student Spaces, Student Services
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Program of Spaces
March 20, 2008

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
A. Classrooms											
1	Classrooms to Stay at Current Locations	a.	Classrooms	Auditorium 212 Classroom 75 Classroom 20 Classroom 10 Classroom 10 Classroom 75 Classroom 20 Classroom 10 Classroom 10		These are existing classrooms located on the 2nd level that have been upgraded. The renovation to add Distance Learning to the Auditorium, and both 75 person classrooms as well as up-grade AV in the Auditorium.			8,200	1	8,200
B. Student Spaces											
1		a.	Student Work Space and Drop in Laptop Computer Lab		Flexible Student Work Space	Work Space for students, informal seating and table seating for Laptop Computer use.	25	35	875	1	875
		b.	Lobby/Lounge/Display		Open Space	Location for Statue			250	1	250
C. Student Services											
1	Offices	a.	Staff Office	(5) Rooms 426, 428, 429, 430, 432	Private Office	Offices have considerable files/storage needs (ideally located near students and SAC--on 2nd floor?)	1	120	120	5	600
		b.	Reception/Secretary	(1) Space 425	Work Station	Control point for entry into AASS "suite" Need to be able to lock up space or lock up "suite" area	1	100	100	1	100
		c.	Outreach Office	(1) Room 307	Private Office		1	120	120	1	120
		d.	Outreach Support	(1) Room 305 (1) GROWTH	Work Station		1	80	80	2	160
		e.	Diversity Office	GROWTH	Private Office		1	120	120	1	120
		f.	PhD Staff Office	(1) Room 522	Private Office		1	120	120	1	120
2	Support	a.	Reception Waiting	(1) Space 425	Open area	Chairs and couches for waiting area. Adjacent to Reception/Secretary	6	15	90	1	90
		b.	File Storage	(1) Room 431		Controlled storage room for student files and recruitment materials		80	0	1	0
		c.	Conference Room	(1) Room 419			8	25	200	1	200
		d.	Work Area	(1) Room 427		Workroom with copy/fax/printers/table and flat working surfaces			200	1	200
		e.	General Storage	GROWTH		General supply storage			80	1	80

University of Utah College of Nursing
Level 2: Classrooms, Student Spaces, Student Services
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Program of Spaces
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Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
D. Level 2 Support										
	a.	Electrical and Telecomm						200	1	200
	b.	Restrooms/Janitor						280	2	560
					Program Total NSF					11,875
					Program Total GSF (ASF / 0.68 Efficiency)					17,463

Office Count Summary Student Services (Accommodated in Program)	Total
# Private Offices Current	7
# Private Offices GROWTH	1
# Work Stations Current	3
# Work Stations GROWTH	1
# Shared (2 pers.) Offices Current	0
# Shared (2 pers.) Offices GROWTH	0
# Shared (4 pers.) Offices Current	0
# Shared (4 pers.) Offices GROWTH	0

University of Utah College of Nursing
Level 3: HSCBC, Faculty Practice and IT
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Program of Spaces
March 20, 2008

# Private Offices Current	3
# Private Offices GROWTH	1
# Work Stations Current	0
# Work Stations GROWTH	0
# Shared (2 pers.) Offices Current	1
# Shared (2 pers.) Offices GROWTH	4

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
A. Faculty Practice: Birthcare/Healthcare											
1	Offices	a.	Executive Director Office -1 Person	(1) Room 105	Private Office		1	180	180	1	180
		b.	Office-1 Person	(2) GROWTH	Private Office		1	120	120	2	240
		b.	Office - 2 Person	(2) GROWTH	Shared Office		2	80	160	2	320
		c.	Shared Office/Work Room	(3) Room 123 (2) GROWTH	Work Room	Large work room with work stations for 4 people, plus 1 touch down. Area to include mailboxes for the providers, fax/copy/printers (4 people @ 64 SF/Person + 1 touchdown @ 25 SF + 120 SF for copy/fax printers/mailboxes /circulation = 381 SF	5	80	400	1	400
		d.	Office- 4 Person	(5) Room 112 (4) GROWTH	Shared Office	Multiple occupancy for 4 work stations, private lockers, lockable filing cabinets for each provider. 4 work stations @ 36 SF/Person + 56 SF for circulation and lockers/storage.	4	80	320	1	320
2	Support	a.	Secure Storage	Room 123	Secure Storage for Charts	This area requires a double-lock (locked space within a locked space).			150	1	150
		b.	Storage-Educational Materials	Room 104		Secure storage for teaching and educational materials.			150	1	150
B. Faculty Practice: Pediatric Nurse Practitioner											
1	Offices	a.	Office-2 Person	(1) Room 112 (1) GROWTH	Shared Office	Contract Position--currently 3 people	2	80	160	2	320
C. Faculty Practice: Palliative Care											
1	Offices	a.	Office-2 Person	(1) Room 448	Shared Office	Contract Position	2	60	120	1	120
D. Faculty Practice: Juvenile Justice											
1	Offices	a.	Office-2 Person	(1) GROWTH	Shared Office	Contract Position--currently 3 people	2	80	160	1	160
E. Faculty Practice: Student Health Services											
1	Offices	a.	Office-1 Person		Private Office	Contract Position--currently 4 person	1	120	120	1	120

University of Utah College of Nursing
Level 3: HSCBC, Faculty Practice and IT
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Program of Spaces
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# Private Offices Current	3
# Private Offices GROWTH	1
# Work Stations Current	0
# Work Stations GROWTH	0
# Shared (2 pers.) Offices Current	1
# Shared (2 pers.) Offices GROWTH	4

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
F.	**HSCBC: Teaching Nursing MS**										
1	Offices	a.	Director of Teaching Nursing Program	(1) Room 456	Private Office	IN general should be zoned with HSCBC Group--but Helen likes everyone "scattered"--provides better opportunity for inter-study interaction	1	180	180	1	180
		b.	Faculty Office-1 Person	(1) Room 314 (1) GROWTH	Private Office		1	120	120	2	240
G.	**HSCBC: Nurse Practitioner Program**										
1	Offices	a.	Director of Nurse Practitioner Program	(1) Room 311	Private Office	Paula loves her existing office.	1	180	180	1	180
		b.	Faculty Office-1 Person	(1) Room 311B (1) Room 318 (1) Room 324 (1) Room 326 (1) Room 330 (4) GROWTH	Private Office	GROWTH could be Private Offices or Workstations	1	120	120	9	1,080
		c.	Faculty Office-2 Person	(1) Room 321	Shared Office	1 office shared by two users	2	80	160	1	160
		d.	Faculty Touch Down Space	Uses Room 580	Shared	Currently has 21 faculty from other locations that need a touch down space with lockers and private files. Not all will utilize the space at the same time. Provide work area for 5.	10	36	360	1	360
H.	**HSCBC: NMW/WHMP Program**										
1	Offices	a.	Director of NMW/WHMP Program	(1) Room 109	Private Office		1	180	180	1	180
		b.	Faculty Office	(1) Room 106 (1) Room 108	Private Office		1	120	120	2	240
		c.	Staff Office	(1) Room 107	Private Office		1	100	100	1	100
2	Support	a.	Storage	Room 127					150	2	300
I.	**HSCBC: Undergraduate Community Health**										

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Level 3: HSCBC, Faculty Practice and IT
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Program of Spaces
March 20, 2008

# Private Offices Current	3
# Private Offices GROWTH	1
# Work Stations Current	0
# Work Stations GROWTH	0
# Shared (2 pers.) Offices Current	1
# Shared (2 pers.) Offices GROWTH	4

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Offices	a.	Faculty Office	(1) Room 309 (1) Room 315 (1) Room 308 (1) Room 446 (1) Room 437 (1) Room 434 (1) Room 440 (3) GROWTH (2) Room 323	Private Office	Room 323 is currently an offices that is shared by 2 people--Need to have 2 separate private offices. GROWTH could be Private Offices or Workstations.	1	120	120	12	1,440

J. HSCBC: Undergraduate Women's Health/Maternity

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Offices	a.	Faculty Office	(2) Room 325	Private Office	This is currently an offices that is shared by 2 people--Need to have 2 separate private offices.	1	120	120	2	240
		b.	Faculty Office-Shared	(1) Room 327	Shared	1 Office shared by 2 people	2	80	160	1	160

K. HSCBC: Division Chair

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Offices	a.	HSCBC Division Chair	(1) Room 513	Private Office	Currently located in Research area west side 5th floor	1	180	180	1	180
		b.	HSCBC Division Secretary	(1) Space 591 (1) Space 525	Work Station	Two division secretaries for HSCBC. Should be located more central to majority of HSCBC faculty	1	100	100	2	200

L. HSCBC: GERONTOLOGY

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Offices	a.	Executive Director Office -1 Person	(1) Room 589	Private Office		1	180	180	1	180
		b.	Faculty Office-1 Person	(1) Room 585 (1) Room 587 (2) GROWTH	Private Office		1	120	120	4	480

M. IT

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Offices	a.	IT Work Area	(1) Room 124A, 124 and GROWTH		Office and Work Space for Media Specialist(s) and Desk Top Support Staff	4	200	800	1	800
2	Support/Storage	a.	IT-General Storage	(1) Room 125		Storage for equipment being worked on			150	1	150
		b.	New Equipment Storage	(1) Room 130		Storage for new equipment			150	1	150
		c.	IT Computer Storage/Staging	(1) Room 103		Staging Area			150	1	150

N. Level 3 Shared Support Spaces

Program of Spaces
March 20, 2008

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
A.	**Dean's Office**										
1	Offices	a.	Dean's Office	(1) Room 409	Private Office	Private Office with space for small meetings, restroom, shower, changing room	1	400	400	1	400
		b.	Dean's Assistant	(1) Room 410	Private Office	Adjacent to Dean's Office	1	140	140	1	140
		c.	Staff Office	(1) Room 413 (1) Room 414	Work Station	Close proximity to Dean's Office	1	100	100	2	200
		d.	Dean's Office Receptionist	GROWTH	Work Station	Control/entry point to Dean's Office	1	150	150	1	150
2	Support	a.	Reception Waiting	GROWTH	Open area	Chairs and couches for waiting area. Adjacent to Reception/Secretary	10	25	250	1	250
		b.	Board Room	Room 405		Large formal meeting room	24	30	720	1	720
		c.	Work Room	Shares 461		Space dedicated to Dean's Office, Business Office and Development Office for copy/fax/printers/ work table and supply storage			200	1	200
		d.	Faculty Mailroom	Room 411		Lockable mail room with loading from 1 side and access from opposite side.			150	1	150
		e.	Printer/Fax/File Room	Room 412		Printer/Fax/File room for Dean's Office and Development Office			200	1	200
B.	**Dean's Office: Development**										
1	Offices	a.	Development Director	(1) Room 407	Private Office		1	180	180	1	180
		b.	Staff Office	(1) Room 408 (1) Room 416	Private Office	Office for Major Gift position and staff position (both existing)	1	120	120	2	240
		c.	Staff Office	GROWTH	Work Station	Development staff	1	120	120	1	120
2	Support	a.	Development Storage	Room 208		Secure storage for brochures, magazines, party supplies, general Dean's Office supplies			150	1	150
		b.	Dean's Office/Office Supplies	Room 402					150	1	150
		c.	Dean's Office Archival Storage	Room 104		Secure archival file storage			150	1	150

University of Utah College of Nursing
Level 4: Administration and Acute and Chronic Care
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Program of Spaces
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	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
C.	**Dean's Office: Business**										
1	Offices	a.	Associate Dean of Business	(1) Room 422	Private Office		1	180	180	1	180
		b.	Staff Office	(1) Room 417 GROWTH	Private Office	Growth Office for new Projects person	1	120	120	2	240
		c.	Staff Office	(1) Room 418	Work Station	Business Staff	1	120	120	1	120
D.	**Dean's Office: Academic Programs Administration**										
1	Offices	a.	Executive Director of Clinical Graduate Program	(1) Room 539	Private Office	Currently located on 5th floor with Research Group. May be better located with HSCBC	1	180	180	1	180
		b.	Secretary	(1) Space 406	Work Station	Currently not located on the same floor as the Executive Director---should be!!	1	120	120	1	120
		c.	Executive Director Undergraduate Women's Health/Maternity	(1) Room 424	Private Office		1	180	180	1	180
		d.	Associate Dean Office Academic Affairs and Student Services	(1) Room 420	Private Office	Does not need to be adjacent to rest of AASS. Needs to be adjacent to Administration	1	180	180	1	180
		e.	Administrative Assistant	(1) Room 421	Work Station	Adjacent to Associate Dean Office for AASS	1	120	120	1	120
E.	**ACC Graduate Level**										
1	Offices	a.	Psych/MIT ACC Division Chair	(1) Room 445	Private Office		1	180	180	1	180
		b.	Psych/MIT Faculty Office	(1) Room 444 (1) Room 423 (1) Room 439 (1) Room 450 (1) Room 441 (2) GROWTH	Private Office	5 Existing Offices + 3 GROWTH (2 people utilizing 580 should have offices + 1 GROWTH)	1	120	120	7	840
		c.	Acute Care Nurse Practitioner Faculty Office	(1) Room 455 (1) Room 438 (1) GROWTH	Private Office	2 Existing Offices + 1 GROWTH	1	120	120	3	360

Program of Spaces
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	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
		e.	Pathophysiology Faculty Office	(1) Room 459	Private Office	1 Existing Office	1	120	120	1	120
		f.	ACC Staff Support	Space 403	Work Stations		1	100	100	2	200

F. ACC Undergraduate

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Offices	a.	Fundamentals/Faculty Office	(1) Room 311A (1) Room 329 (1) Room 443 (1) Room 310 (1) Room 322 (2) GROWTH	Private Office	5 Existing Offices + 2 GROWTH (2 GROWTH may want to be located in Simulation Lab)	1	120	120	7	840
		b.	Pediatrics Faculty Office	(1) Room 449 (1) Room 447 (1) Room 306	Private Office	3 Existing Offices	1	120	120	3	360
		c.	Medical Surgery Faculty Office	(1) Room 458 (1) Room 452 (1) Room 453 (1) Room 328 (1) Room 320	Private Office	5 Existing Offices	1	120	120	5	600
		d.	Faculty Office	(1) Room 442	Private Office	1 Existing Office	1	120	120	1	120
		e.	Pharmacology	(1) Room 319	Private Office	1 Existing Office	1	120	120	1	120

G. Level 4 Shared Support Spaces

	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
1	Support	a.	Conference Room	Room 401 Shared		Meeting Room--can be shared with other users/divisions on the floor	16	25	400	1	400
		b.	Break Room	Room 313		Break Room can be shared by Division/entire floor	12	25	300	1	300
		c.	Copy/Fax/Printing	Room 312		Can be shared by Division			200	1	200
		d.	Student Touch Down Space	Uses Room 580	Shared	Additional touch down space for students	12	35	420	1	420
		c.	Reception/Secretary	Room 312		Can be shared by Division			225	1	225
		d.	Reception Waiting/Seating			Seating Area			400	1	400
		e.	Electrical and Telecomm						200	1	200

University of Utah College of Nursing
Level 4: Administration and Acute and Chronic Care
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Program of Spaces
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Function Area	Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
				Program Total NSF					11,405
				Program Total GSF (ASF / 0.68 Efficiency)					16,772

Office Count Summary (Accommodated in Program)	Admin.	ACC	Total
# Private Offices Current	10	25	35
# Private Offices GROWTH	1	6	7
# Work Stations Current	5	2	7
# Work Stations GROWTH	2	0	2
# Shared (2 pers.) Offices Current	0	0	0
# Shared (2 pers.) Offices GROWTH	0	0	0
# Shared (4 pers.) Offices Current	0	0	0
# Shared (4 pers.) Offices GROWTH	0	0	0

Program of Spaces
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Function Area			Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
A. Level 5: Research; Previously Renovated West Side of Building										EXISTING WEST SIDE	
1	Offices	a.	Research Endowed Chair/Associate Dean/Executive Director	(1) Room 507 (1) Room 513 (1) Room 549	Private Office	HSCBC Division Chair has been moved to Admin.	1	185	185	2	370
		b.	Research Faculty	(1) Room 501 (1) Room 503 (1) Room 505 (1) Room 509 (1) Room 511 (1) Room 543 (1) Room 545 (1) Room 551 (1) Room 553 (1) Room 555	Private Office	Room 539 (Pat) has been accounted for under HSCBC.	1	144	144	12	1,728
		c.	Research Assistants	Space 554	Work Station	3 research assistants in this space	3	80	240	1	240
		d.	Research Assistants	Space 510	Work Station	5 research assistants in this space	5	72	360	1	360
		e.	Research Admin. Assistants/Project Administrators	(1) Room 536 (1) Room 538 (1) Room 542 (1) Room 544	Private Office		1	70	70	4	280
		f.	Research Admin. Assistants/Project Administrators	(1) Room 537	Shared Work Room		6	50	300	1	300
		g.	Research Admin. Statistics Support Staff	(1) Room 515	Shared Work Room		4	75	300	1	300
		h.	Research-Undergrad Assistants	(1) Space 502	Shared Work Space	3 work stations	3	80	240	1	240
2	Support	a.	Break Room	(1) Room 519	Shared				380	1	380
		b.	Conference Rooms	(1) Room 520 (1) Room 530 (1) Room 533	Shared	Should consider distance learning added to these spaces.			540	1	540
		d.	Reception	(1) Space 525	Shared	This is the Research Reception but currently has the HSCBC Secretary at this location			200	1	200
		e.	File/Storage	(1) Space 514 (1) Space 540	Shared	Currently is very full			152	2	304

University of Utah College of Nursing
Level 5: Research
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Program of Spaces
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	Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
B.	**Level 5: Research, East Side of Building**										
1	Offices	a.	Research Endowed Chair	(1) Room 575 (1) Room 457 (4) GROWTH	Private Office		1	185	185	6	1,110
		b.	Research Faculty	(1) Room 557 (1) Room 559 (1) Room 561 (1) Room 567 (1) Room 569 (1) Room 571 (1) Room 573 (5) GROWTH	Private Office		1	144	144	12	1,728
		c.	Research Staff Office	(2) Room 401 (3) GROWTH	Private Office		1	120	120	5	600
		d.	Research Staff-4 Person Shared Space	(1) Room 592 (1) Room 588	Enclosed Office with 4 work station	Research space for 4 work stations, private lockers, lockable filing cabinets for each provider. 4 work stations @ 36 SF/Person + 56 SF for circulation and lockers/storage.	4	90	360	2	720
		e.	Research Staff-6 Person Shared Space	(1) GROWTH	Enclosed Office with 6 work station	Similar to space on west side of Level 5: Enclosed space for 6 work stations	6	80	480	1	480
		f.	File Storage	(1) Room 568	Shared	Storage for Project Files			120	2	240
		g.	Qualitative Lab	GROWTH	Shared	Needs more space for qualitative work--space for small groups to meet and work for up to 12 people. A control room associated with this space and media editing room.	12	24	400	1	400
		h.	Project Rooms			Work Rooms for Research Projects	1	120	120	2	240
		i.	Interview (flexible) Rooms	GROWTH	Shared	Need additional flexible space			120	2	240
C.	**Level 5 Shared Support Spaces**										
1	Support	a.	Seminar/Conference Room	Room 586 Shared		Meeting Room--can be shared with other users/divisions on the floor	12	25	300	1	300
		b.	Copy/Fax/Printing			Can be shared by Research Floor			180	1	180
		c.	Reception Waiting/Seating			Seating Area			200	1	200

University of Utah College of Nursing
Level 5: Research
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Program of Spaces
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Function Area		Space Name	Current Location	Description	Notes	Occ #	SF / P	NASF	#	Program NASF
	d.	Electrical and Telecomm						200	1	200
	e.	Restrooms/Janitor						280	2	560
	f.	Atrium (Floor Area Open to Below)						300	1	300
					Program Total NSF					12,740
					Program Total GSF (ASF / 0.68 Efficiency)					18,735

Office Count Summary Research (Accommodated in Program)	Total
# Private Offices Current	11
# Private Offices GROWTH	12
# Work Stations Current	0
# Work Stations GROWTH	0
# Shared (2 pers.) Offices Current	0
# Shared (2 pers.) Offices GROWTH	0
# Shared (4 pers.) Offices Current	2
# Shared (4 pers.) Offices GROWTH	0

Building Organization and Stacking Diagram (Adjacencies)

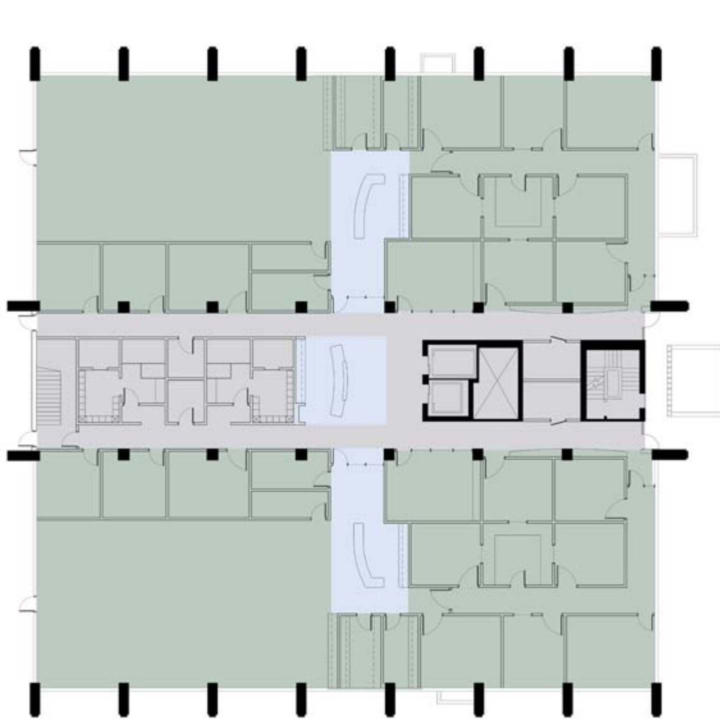
The diagrams on the following page illustrate the building organization and stacking concept developed during programming. These concepts are not final, but are meant to serve as a "point of departure" for subsequent design phases.

Essentially, the diagrams suggest a building that is organized around two perpendicular cores; the 1st core (east-west) for entry, lobby, and shared building and shared student spaces; and the 2nd core (north-south) is for vertical circulation, restrooms, and building support spaces.

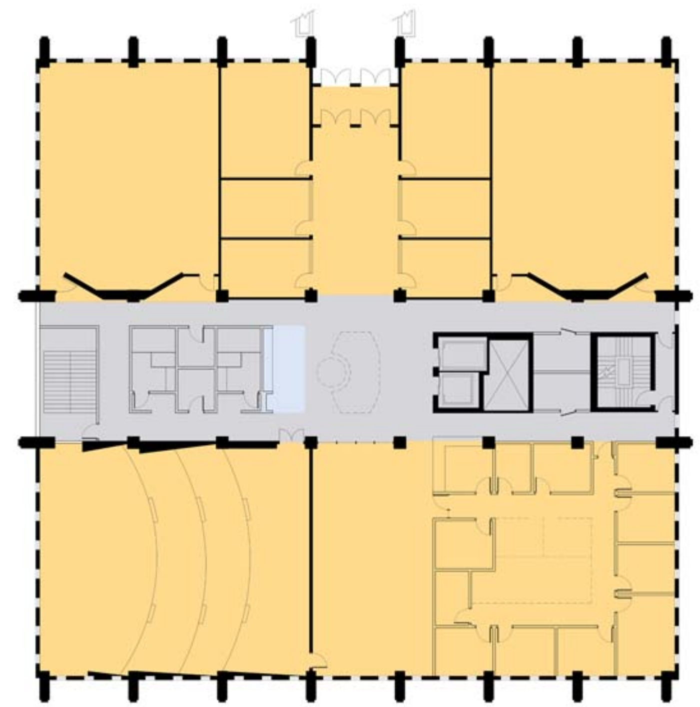
While the purpose/function of the two basements, the lower level parking, and the mechanical sub-basement, will remain relatively unchanged, the functions on Levels 1 through 5 will be reconfigured for the renovation:

- Level 1	Simulation Learning Center
- Level 2	Classroom, Shared Student Space, and Student Services
- Level 3	Offices
- Level 4	Offices (including Admin.)
- Level 5	Research Offices

stacking diagram

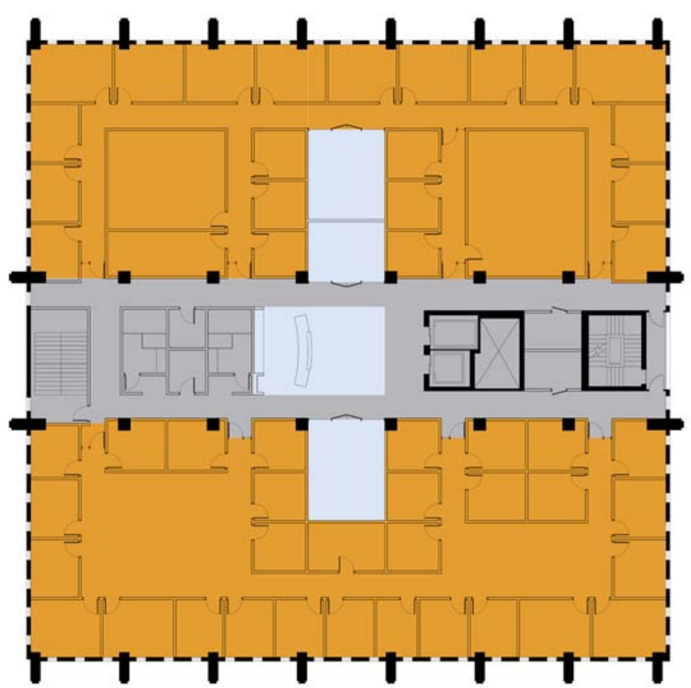


LEVEL ONE

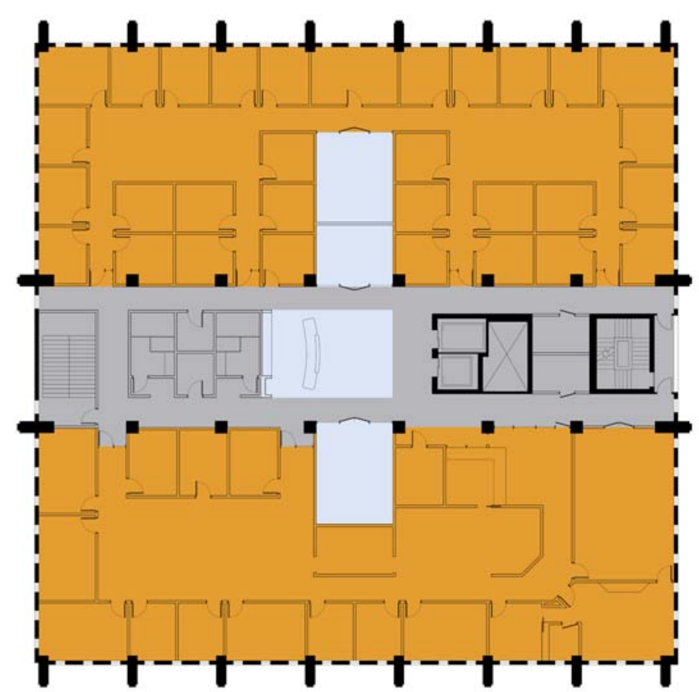


LEVEL TWO

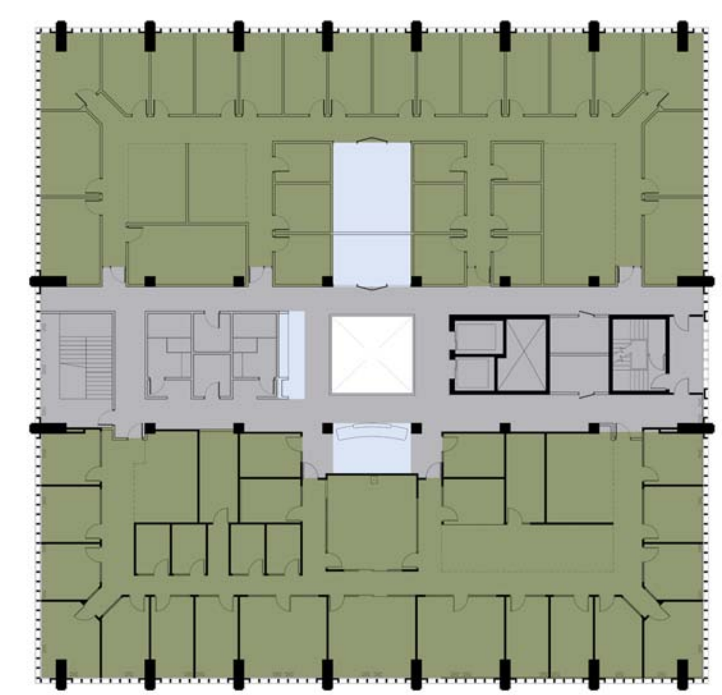
- faculty and administration offices, office support spaces
- simulation learning center
- classroom
  shared student space
  student services
- research
- shared space
- core support



LEVEL THREE



LEVEL FOUR



LEVEL FIVE

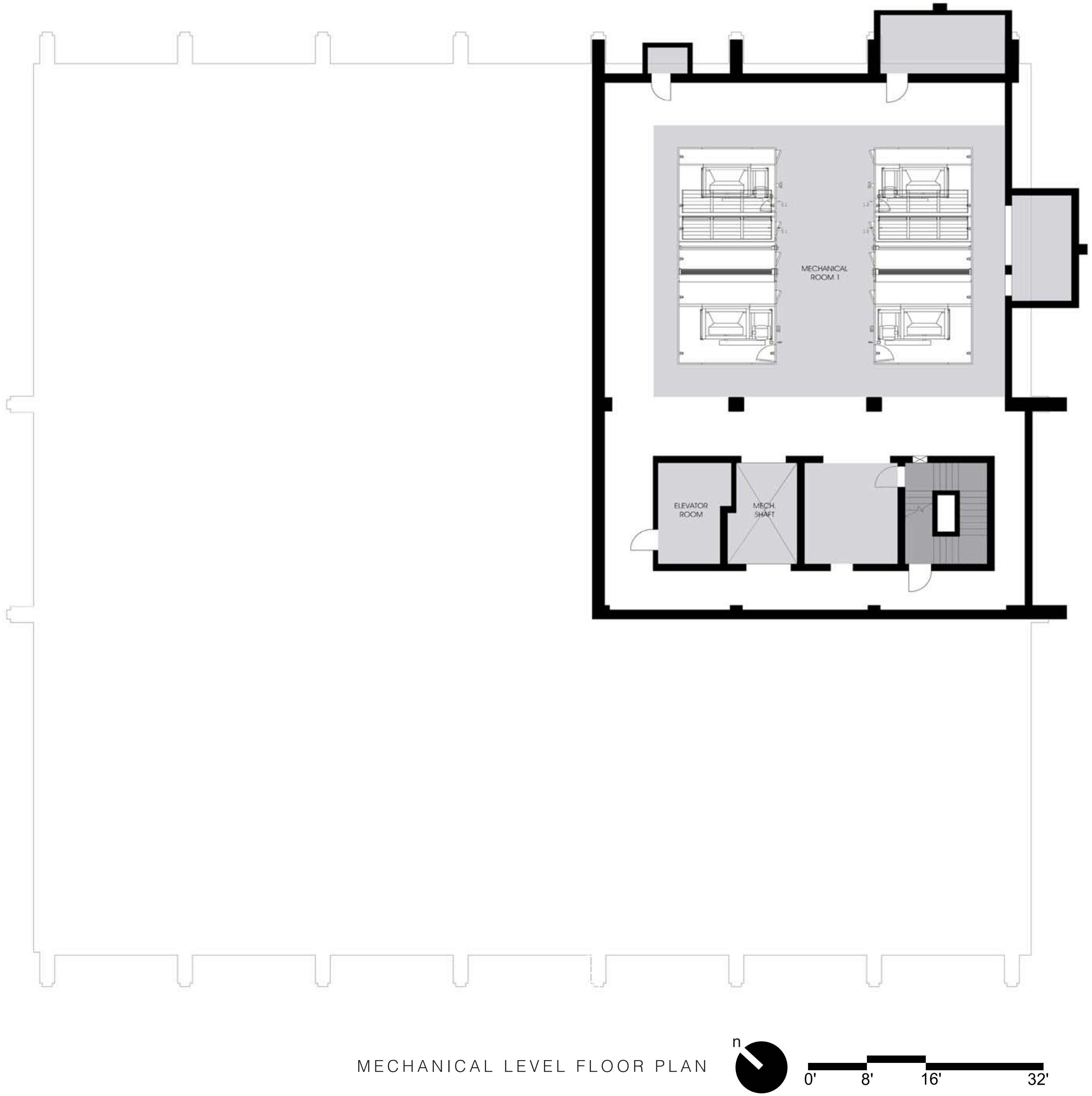
Test-Fit Floor Plans

Each space listed in the program spreadsheet is located on the plan diagrams, Test-Fit floor plans, on the following pages, with relative size and general adjacencies implied. A plan diagram for each level of the building is included and, together, serve to further illustrate the preferred stacking concept developed during programming. These plan diagrams are not final floor plans, but are intended to be a "point of departure" for subsequent design phases. Exact room sizes and locations, as well as details such as door and window locations, furniture layouts, and so on, will require further study and analysis. The plan diagrams on the following pages serve only as verification of the program.

Departments and general groupings developed during programming are indicated on the plan diagrams on the following pages. The following groupings are included:

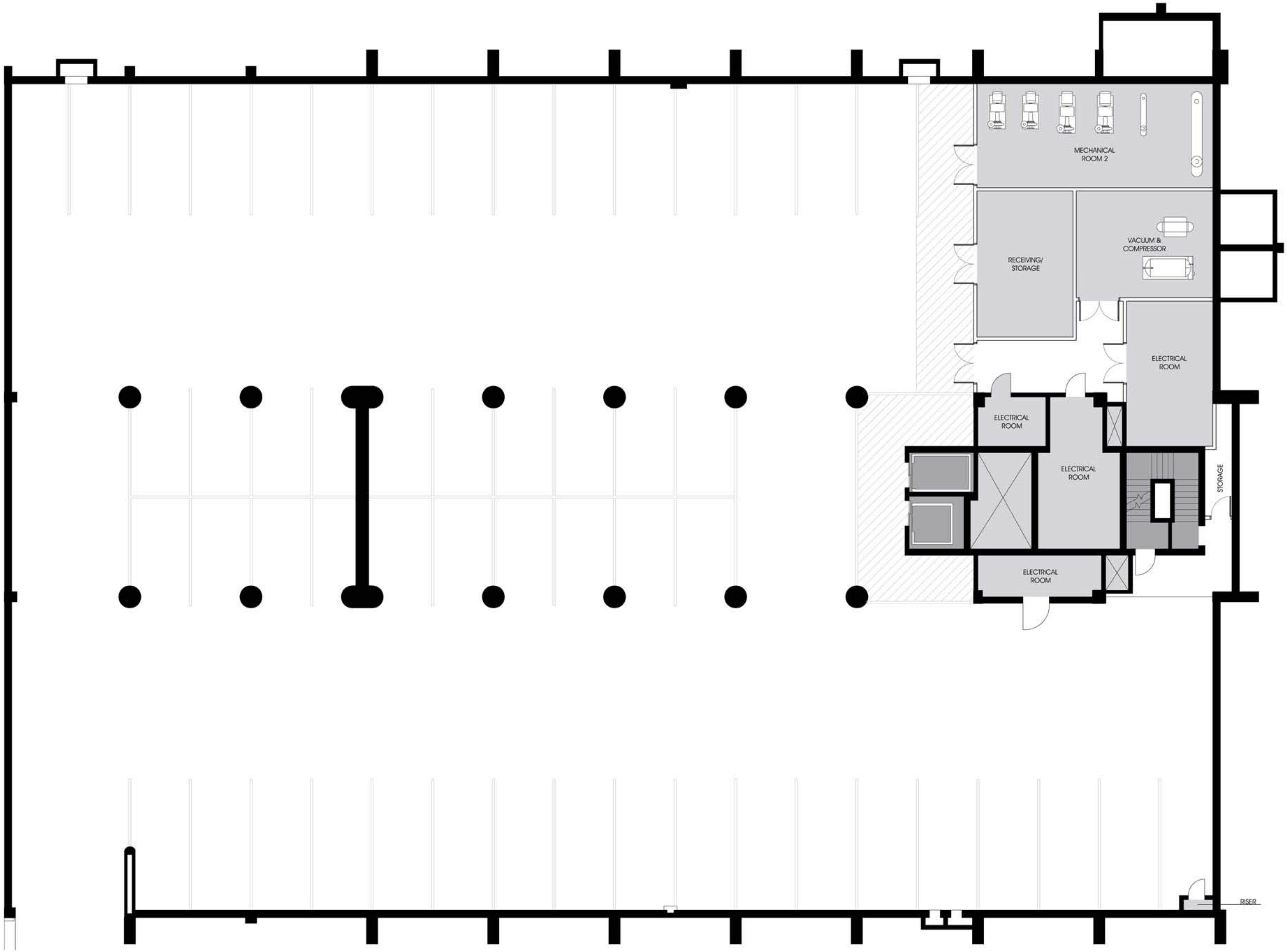
- Health Systems/Community Based Care
- Faculty Practice
- Acute & Chronic Care
- Information Technology
- Research
- Administration
- Student Services
- Simulation Learning Center
- Classrooms
- Building Shared Spaces
- Shared Student Spaces
- Building Support Spaces (Elec/Tele/Data)
- Restrooms
- General Building Circulation
- Vertical Circulation (Stairs/Elevators)

Some information has been omitted for clarity. See the Room Data Sheets in this section for additional detail for each space indicated.



MECHANICAL LEVEL FLOOR PLAN

- health systems / community base care division
- faculty practice
- Information technology
- acute and chronic care division
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



PARKING LEVEL FLOOR PLAN

health systems / community base care division

faculty practice

Information technology

acute and chronic care division

simulation learning center

student services

administration

shared space

research

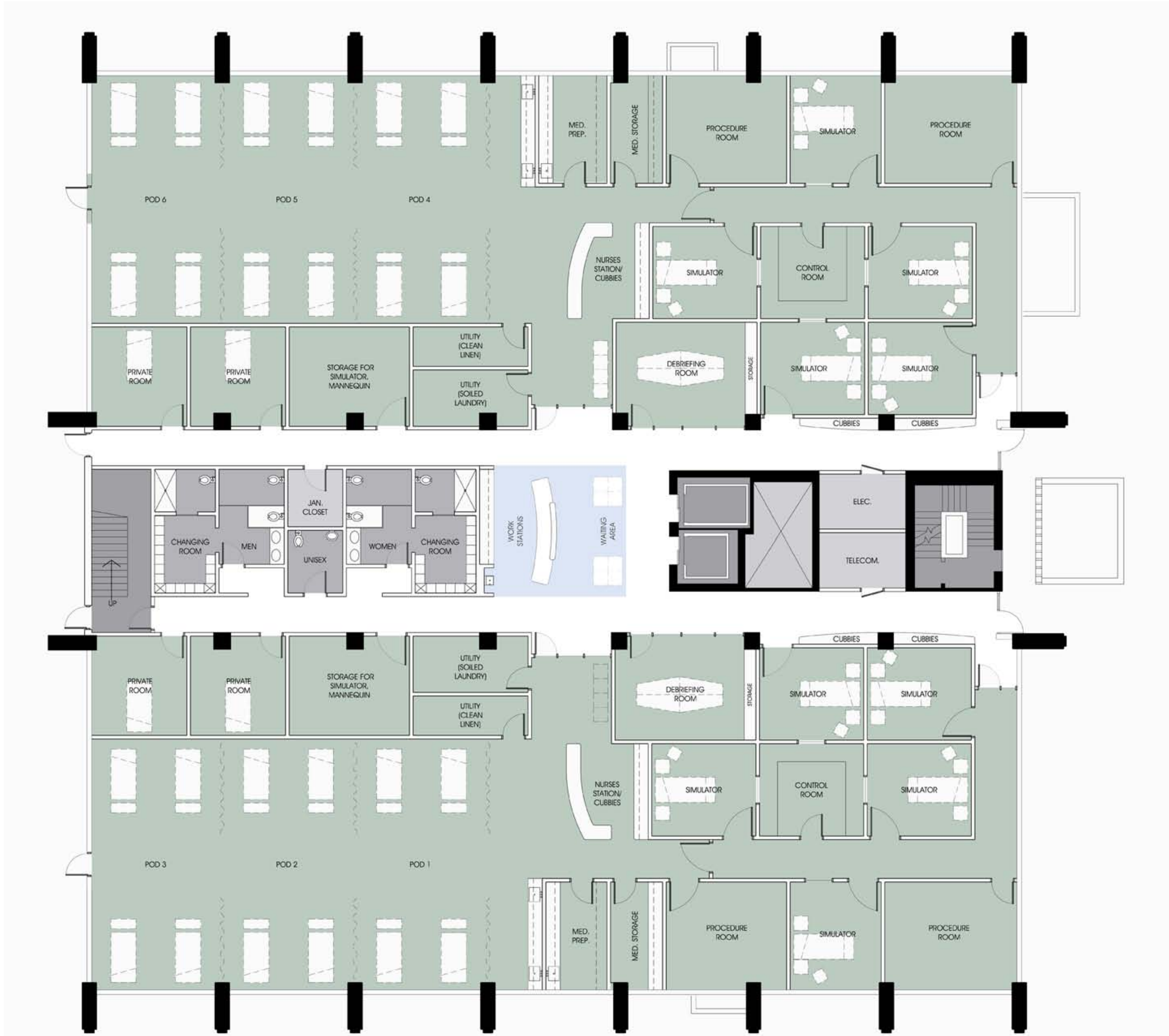
classroom

shared student space

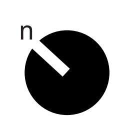
support

restrooms

vertical circulation



LEVEL ONE FLOOR PLAN



- health systems / community base care division
- faculty practice
- Information technology
- acute and chronic care division
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation

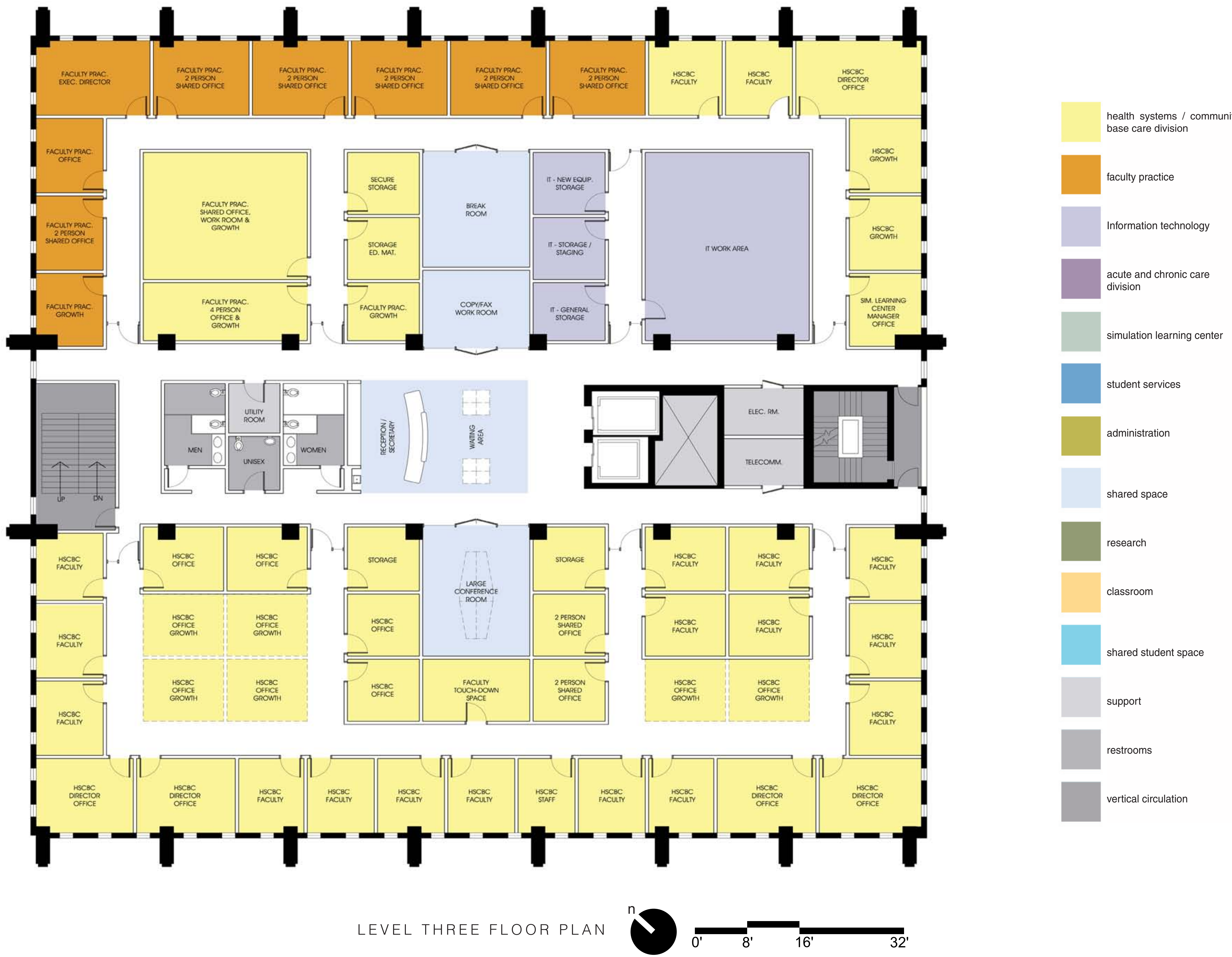
LEVEL TWO FLOOR PLAN

n

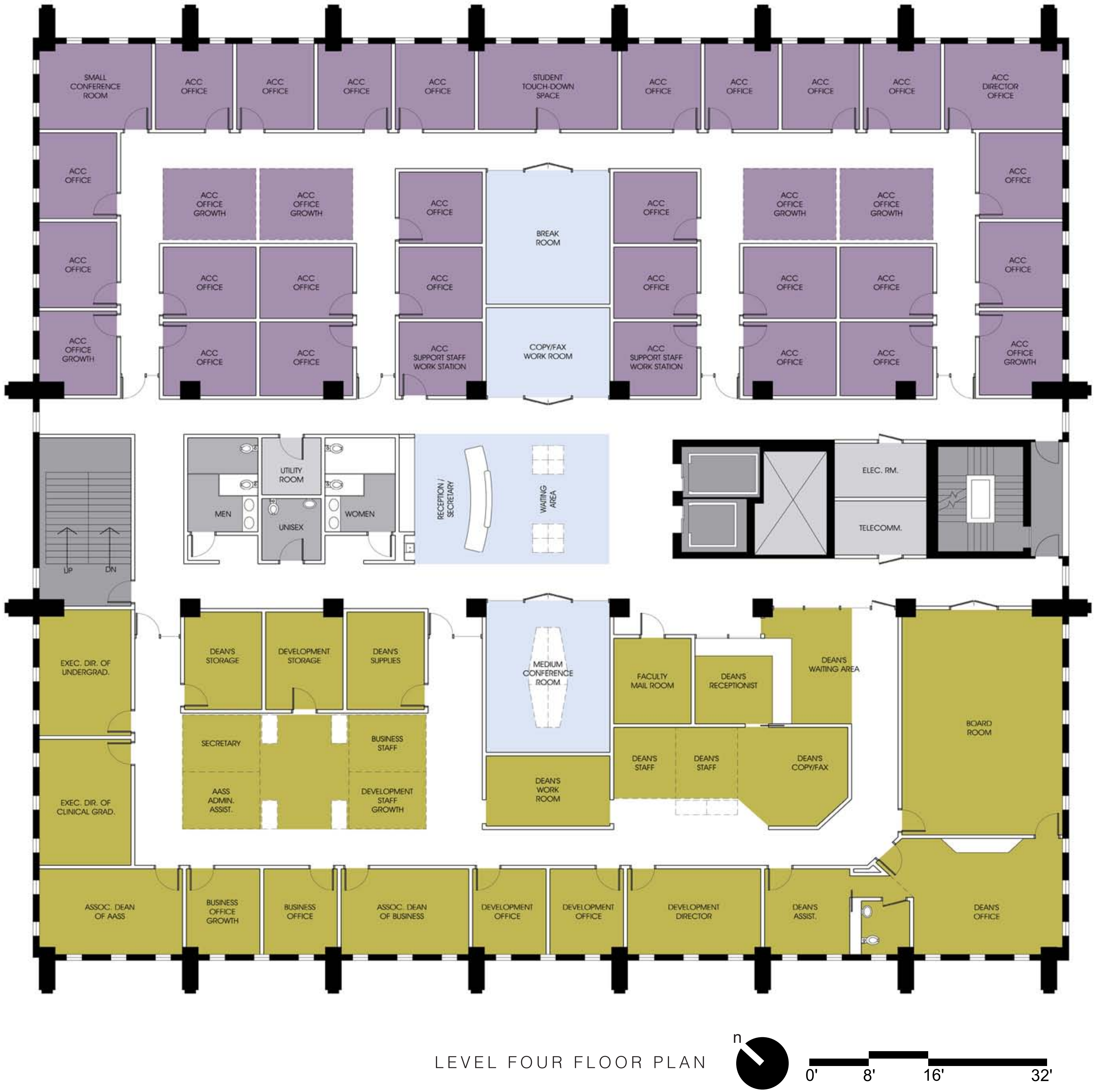
0' 8' 16' 32'

- health systems / community base care division
- faculty practice
- Information technology
- acute and chronic care division
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation

test-fit floor plans - level two

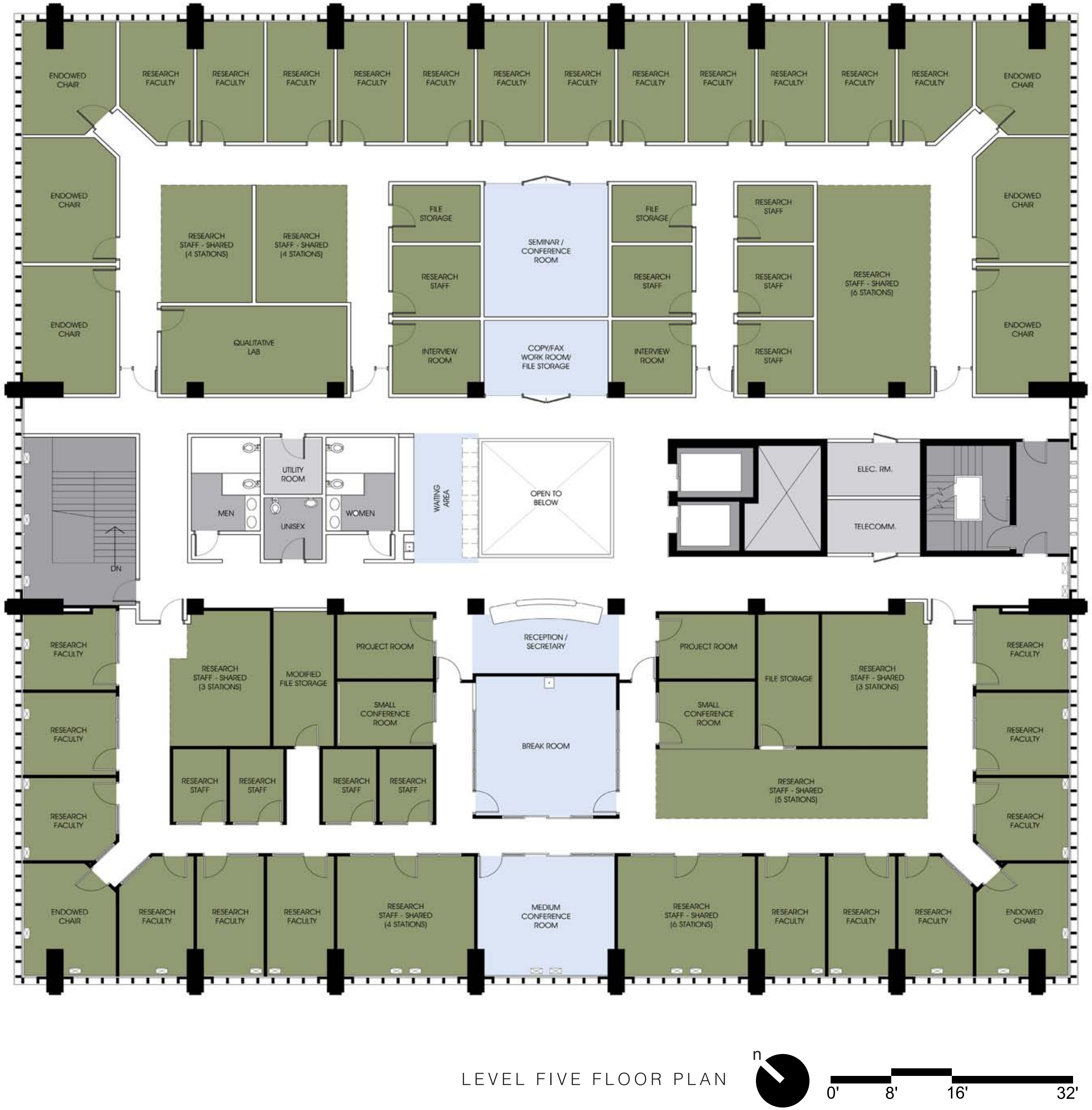


LEVEL THREE FLOOR PLAN



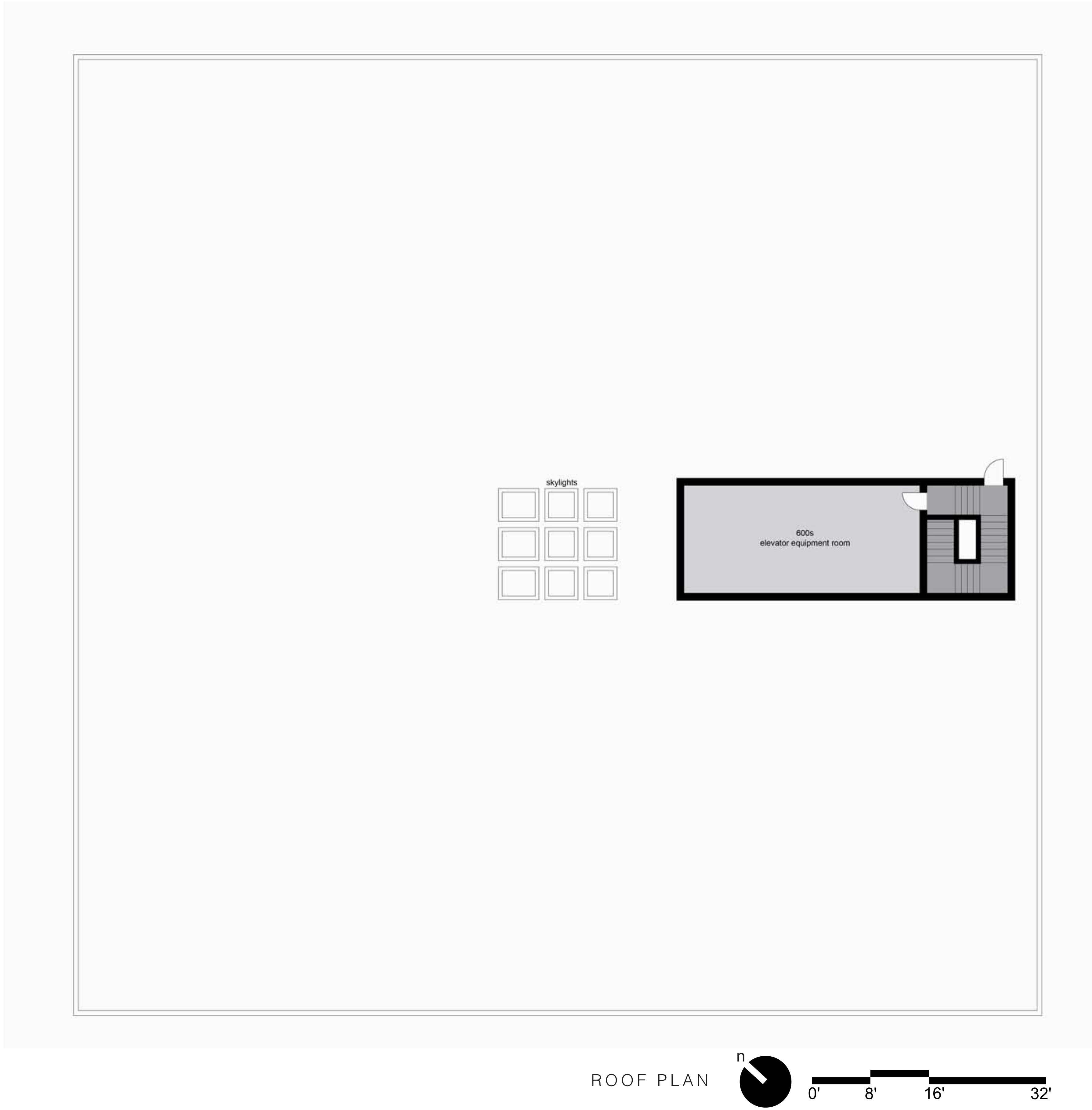
LEVEL FOUR FLOOR PLAN

- health systems / community base care division
- faculty practice
- Information technology
- acute and chronic care division
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



LEVEL FIVE FLOOR PLAN

- health systems / community base care division
- faculty practice
- Information technology
- acute and chronic care division
- simulation learning center
- student services
- administration
- shared space
- research
- classroom
- shared student space
- support
- restrooms
- vertical circulation



ROOF PLAN

	health systems / community base care division
	faculty practice
	Information technology
	acute and chronic care division
	simulation learning center
	student services
	administration
	shared space
	research
	classroom
	shared student space
	support
	restrooms
	vertical circulation

Room Data Sheets

The diagrams and charts on the following pages provide a detailed analysis of the requirements for each new space programmed for the renovated College of Nursing Building. The following list of requirements are included in either the plan or chart for each space:

- Function and activities performed
- Suggested space dimensions
- Sample floor plan
  (specific equipment clearances indicated)
- Number of assigned occupants
- Type of light required: natural or artificial
  (see below for fixture type abbreviations)
- Window requirements
- Security requirements
- Suggested finish materials
- Specific electrical requirements
  (see Section 4 for general electrical requirements)
- Communications requirements
- Audio/Visual requirements
- Required ceiling height
- Furnishings and equipment requirements

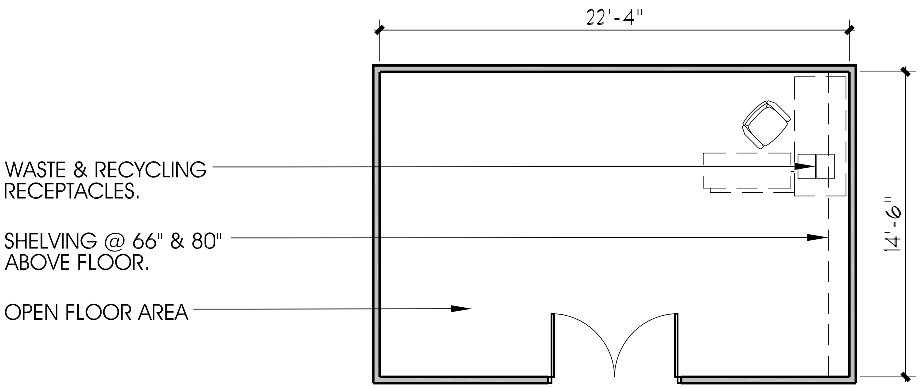
Abbreviations used on the Room Data Sheets:

NR =	Preferred, but not required
SC =	Sealed Concrete
WD =	Wood Paneling
LG/AF =	Low-glare/ambient fluorescent
UF =	Utility fluorescent
TSK =	Task
DEC =	Decorative or accent
MLC =	Dimmable or multi-level control
OC =	Occupancy control

Required Adjacencies are listed below the chart. Similarly, any special requirements required for an individual space are listed below the chart. See Section 04 for all general architectural, mechanical and electrical requirements.

STORAGE & RECEIVING

PROGRAM SPREADSHEET REFERENCE
Lower Level Parking



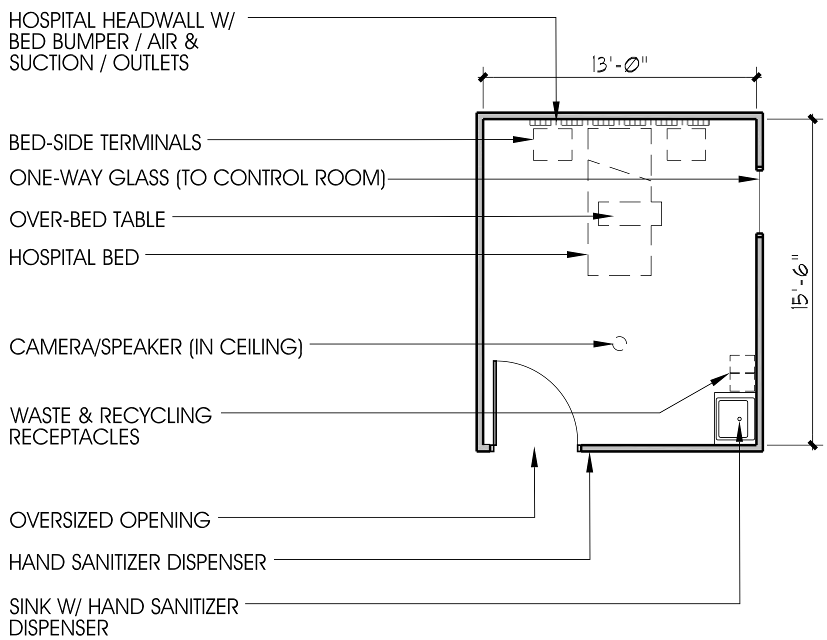
ROOM DATA

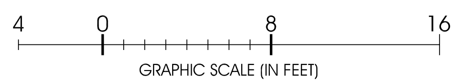
# OF OCCUPANTS	-
AREA (NASF)	325
CARPET / RUBBER BASE	
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	SC
LAY-IN CEILING	
OTHER CEILING	EXP
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	●
STANDARD DOOR	
OVERSIZED DOOR WIDTH (IN FEET)	6
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	●
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS: ELEVATORS/DELIVERY TRUCK ACCESS
SPECIAL:

SIMULATOR ROOM

PROGRAM SPREADSHEET REFERENCE
Level 1 - A.1.a





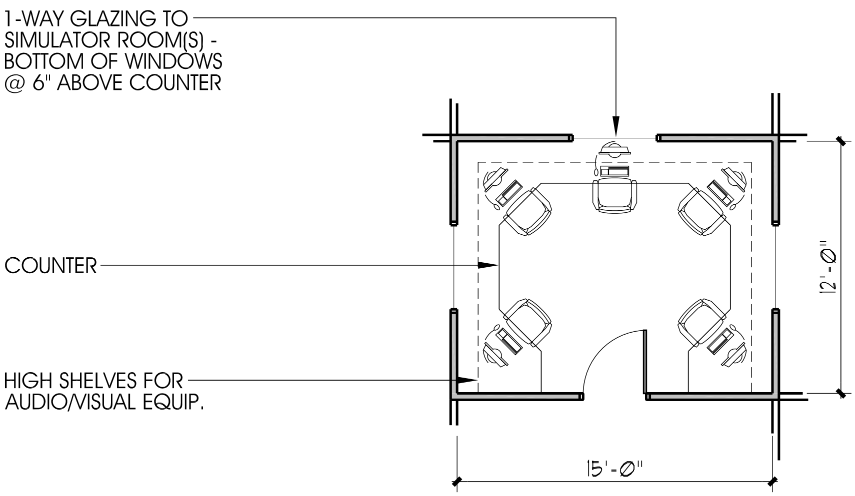
ROOM DATA

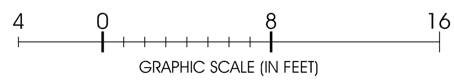
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	200		●			●			●					4			NR				●	●	●	●		●	●	●			●		●

ADJACENCY REQUIREMENTS: SIMULATOR CONTROL ROOM, PROCEDURE ROOM, NURSES STATION
SPECIAL: 1-WAY GLASS

SIMULATOR CONTROL ROOM

PROGRAM SPREADSHEET REFERENCE
Level 1 - A.2.a





ROOM DATA

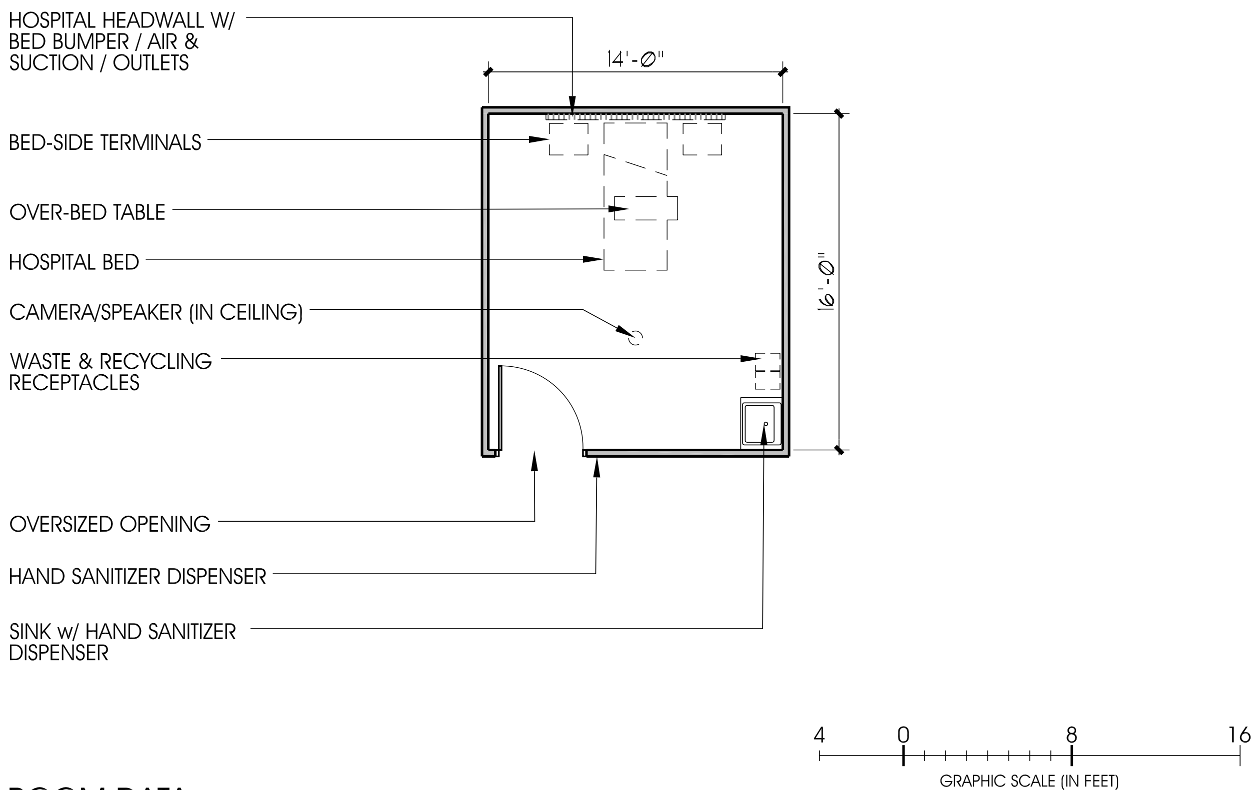
# OF OCCUPANTS	9
AREA (NASF)	180
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	●
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	MIC
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: SIMULATOR ROOM, PROCEDURE ROOM, NURSES STATION
SPECIAL: 1-WAY GLASS

PROCEDURE ROOM

PROGRAM SPREADSHEET REFERENCE

Level 1 - A.3.a
Level 1 - B.2.a



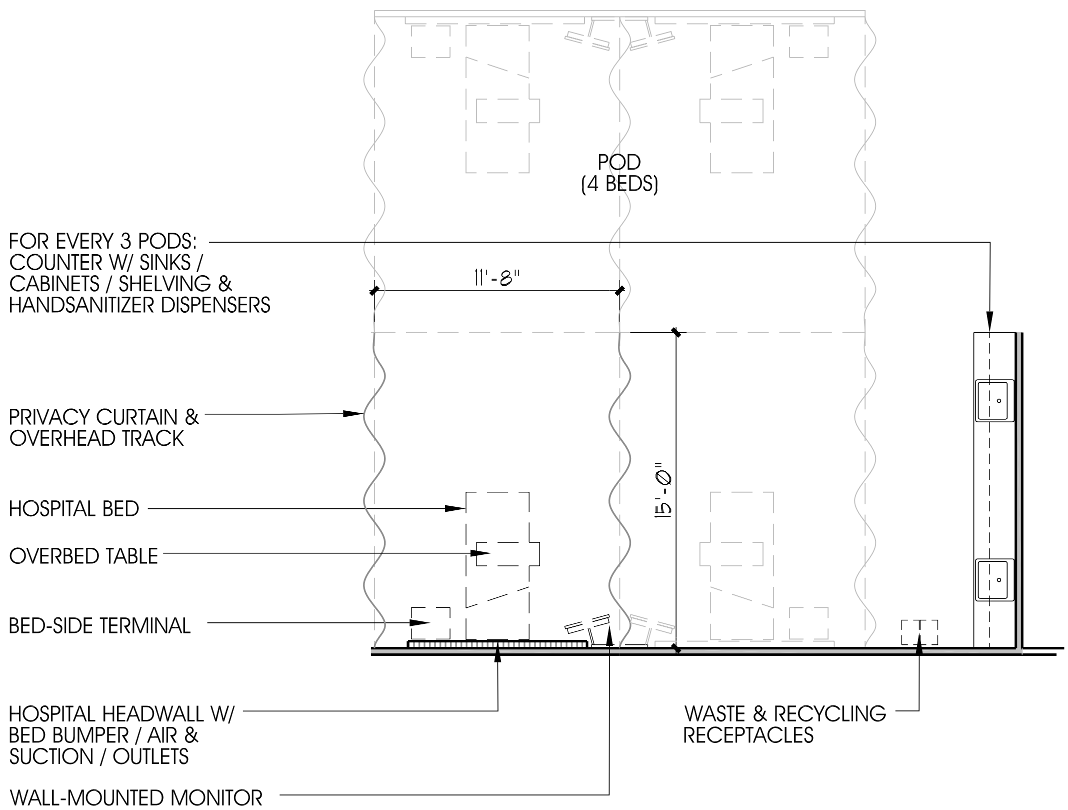
ROOM DATA

# OF OCCUPANTS	10
AREA (NASF)	200
CARPET / RUBBER BASE	
VCT / RUBBER BASE	●
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	
OVERSIZED DOOR WIDTH (IN FEET)	4
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	●
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	●
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	●
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	●
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	●
HOSPITAL HEADWALL	●
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: SIMULATOR ROOM, SIMULATOR CONTROL ROOM, NURSES STATION
SPECIAL:

LOWER FIDELITY TRAINING

PROGRAM SPREADSHEET REFERENCE
Level 1 - B.1.a



4 0 8 16
GRAPHIC SCALE (IN FEET)

ROOM DATA

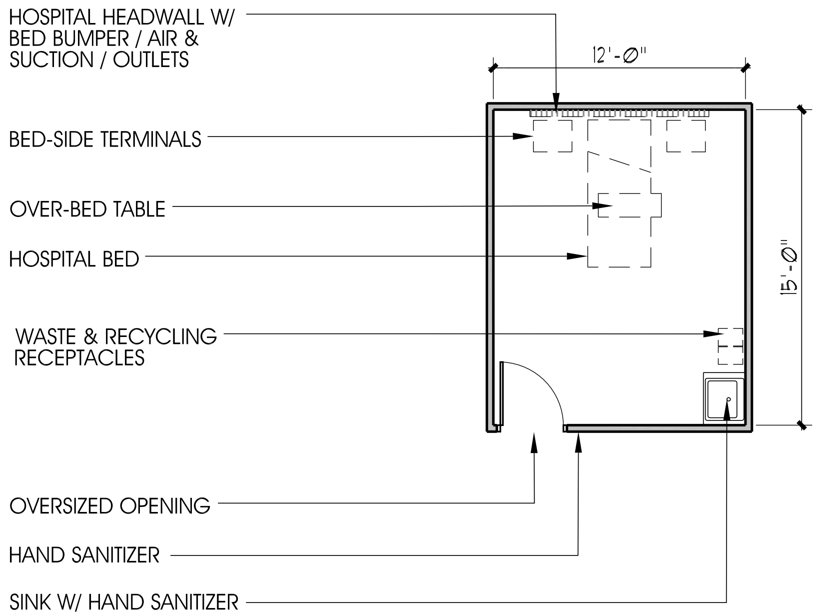
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	175		●			●			●							●	●				●	●	●	●				●		●	●		

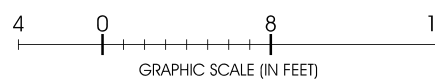
ADJACENCY REQUIREMENTS: NURSE STATION, MED. PREP. ROOM
SPECIAL: ACCESS TO COMMON SINK AREA

LOWER FIDELITY TRAINING

PROGRAM SPREADSHEET REFERENCE

Level 1 - B.1.b
Level 1 - B.1.c
Level 1 - B.1.d





ROOM DATA

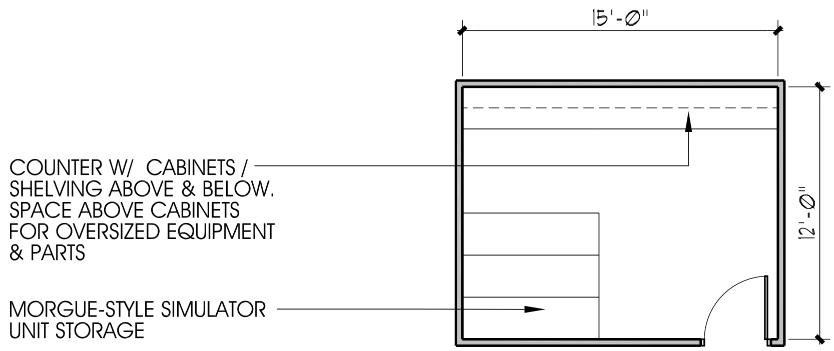
# OF OCCUPANTS	-
AREA (NASF)	180
CARPET / RUBBER BASE	
VCT / RUBBER BASE	●
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	●
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	●
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	●
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	●
HOSPITAL HEADWALL	●
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

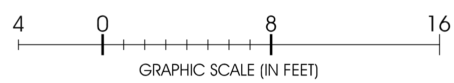
ADJACENCY REQUIREMENTS:
SPECIAL:

SIMULATOR / MANNEQUIN STORAGE

PROGRAM SPREADSHEET REFERENCE

Level 1 - A.4.a
Level 1 - B.4.a





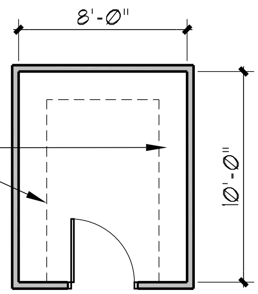
ROOM DATA

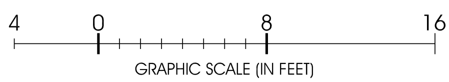
# OF OCCUPANTS	-
AREA (NASF)	180
CARPET / RUBBER BASE	
VCT / RUBBER BASE	●
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS:
SPECIAL:

MEDICATION STORAGE

PROGRAM SPREADSHEET REFERENCE
Level 1 - A.4.b





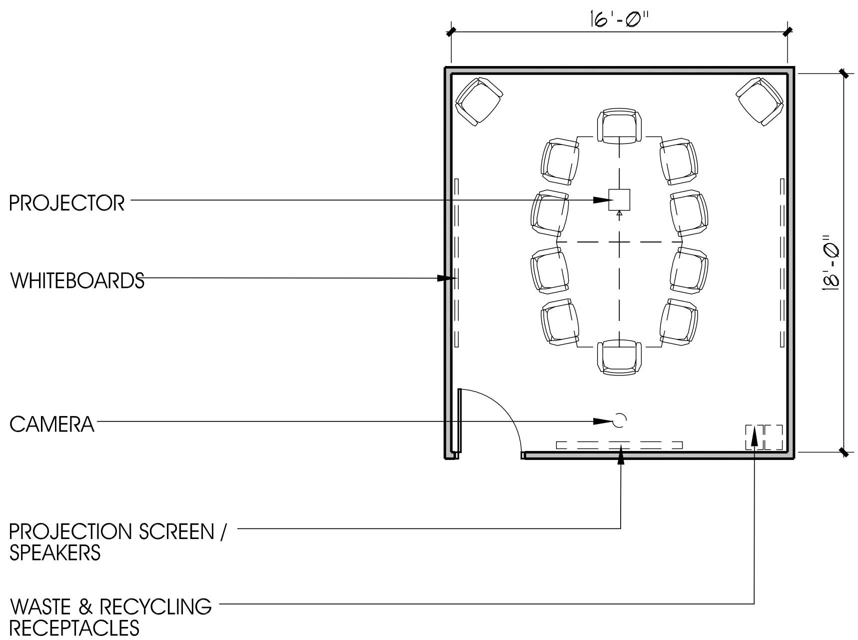
ROOM DATA

# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	80		●			●			●		●	●	●																				●

ADJACENCY REQUIREMENTS: MED. PREP. ROOM, NURSE STATION, SIMULATION ROOMS
SPECIAL:

PREP / DEBRIEFING ROOM

PROGRAM SPREADSHEET REFERENCE
Level 1 - B.3.a



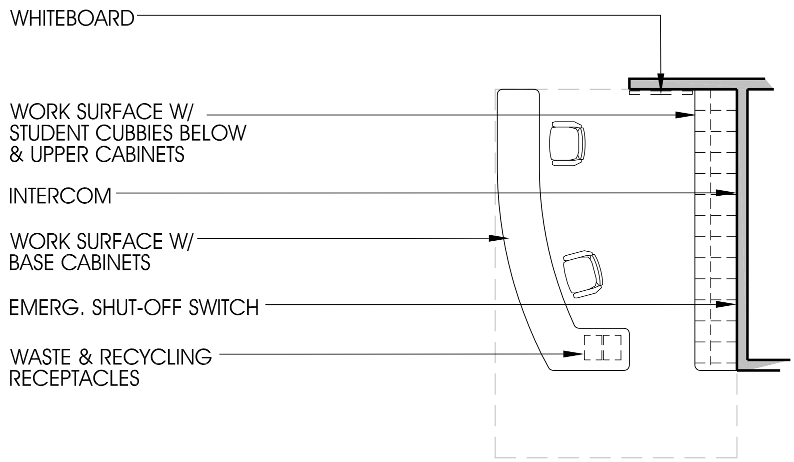
ROOM DATA

# OF OCCUPANTS	12
AREA (NASF)	288
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	●
CAMERA / MICROPHONE	●
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: STORAGE
SPECIAL: EQUIP FOR DISTANCE LEARNING

NURSES STATION

PROGRAM SPREADSHEET REFERENCE
Level 1 - C.1.a



ROOM DATA

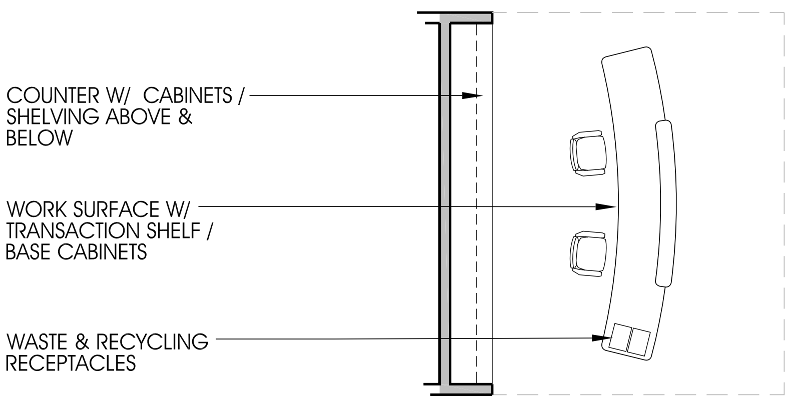
# OF OCCUPANTS	4
AREA (NASF)	200
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	
STANDARD DOOR	
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	●
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	●
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	HS
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: SIMULATOR ROOM, SIMULATOR CONTROL ROOM, PROCEDURE ROOM
SPECIAL:

RECEPTIONIST / CONTROL DESK

PROGRAM SPREADSHEET REFERENCE

Level 1 - C.2.a
Level 3 - N.1.e
Level 4 - G.1.c



ROOM DATA

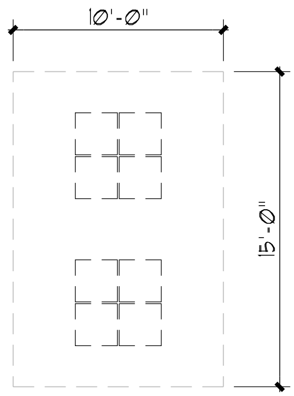
# OF OCCUPANTS	6
AREA (NASF)	150
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	
STANDARD DOOR	
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: WAITING AREA
SPECIAL:

RECEPTION / WAITING

PROGRAM SPREADSHEET REFERENCE

Level 1 - C.2.b
Level 3 - N.1.e
Level 4 - G.1.d



ROOM DATA

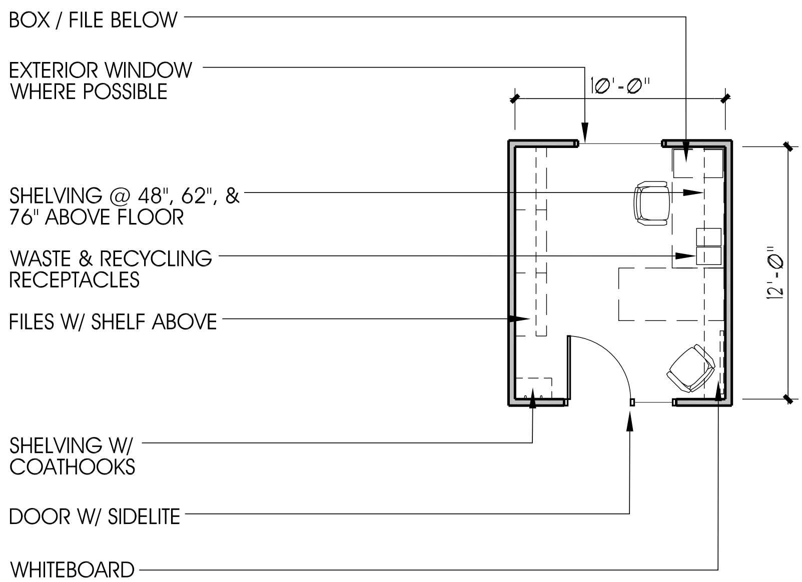
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
6	150	●				●			●								NR			●													

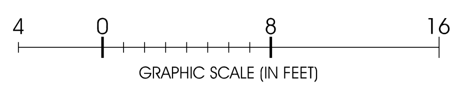
ADJACENCY REQUIREMENTS: RECEPTION DESK
SPECIAL:

PRIVATE OFFICE - 120

PROGRAM SPREADSHEET REFERENCE

Level 1 - C.2.c
Level 2 - C.1.a
Level 2 - C.1.c
Level 2 - C.1.e
Level 2 - C.1.f
Level 3 - A.1.b
Level 3 - E.1.a
Level 3 - F.1.b
Level 3 - G.1.b
Level 3 - H.1.b
Level 3 - I.1.a
Level 3 - J.1.a
Level 3 - L.1.b
Level 4 - B.1.b
Level 4 - C.1.b
Level 4 - C.1.c
Level 4 - D.1.a
Level 4 - E.1.b
Level 4 - E.1.c
Level 4 - E.1.d
Level 4 - E.1.e
Level 4 - F.1.a
Level 4 - F.1.b
Level 4 - F.1.c
Level 4 - F.1.d
Level 4 - F.1.e
Level 5 - B.1.c





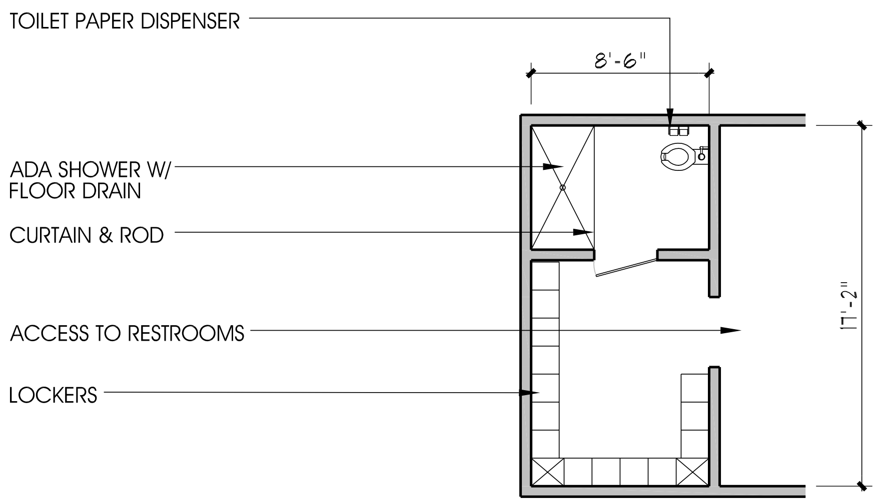
ROOM DATA

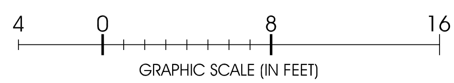
# OF OCCUPANTS	1
AREA (NASF)	120
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	●
WINDOWS / DAYLIGHT	●
DESK / CHAIRS	●
FILES	●
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

STUDENT CHANGING ROOMS

PROGRAM SPREADSHEET REFERENCE
Level 1 - C.3.c





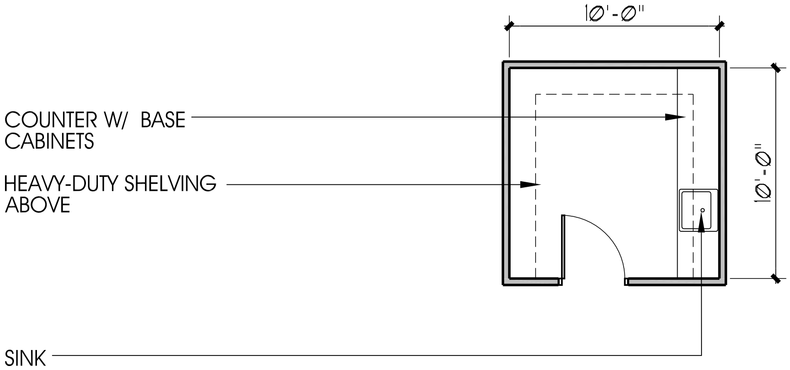
ROOM DATA

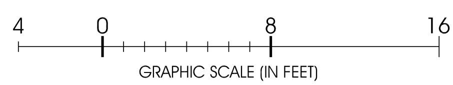
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	145			●			GWB		●	●			●																●				●

ADJACENCY REQUIREMENTS: RESTROOMS
SPECIAL:

UTILITY: CLEAN (LINEN)

PROGRAM SPREADSHEET REFERENCE
Level 1 - C.4.a





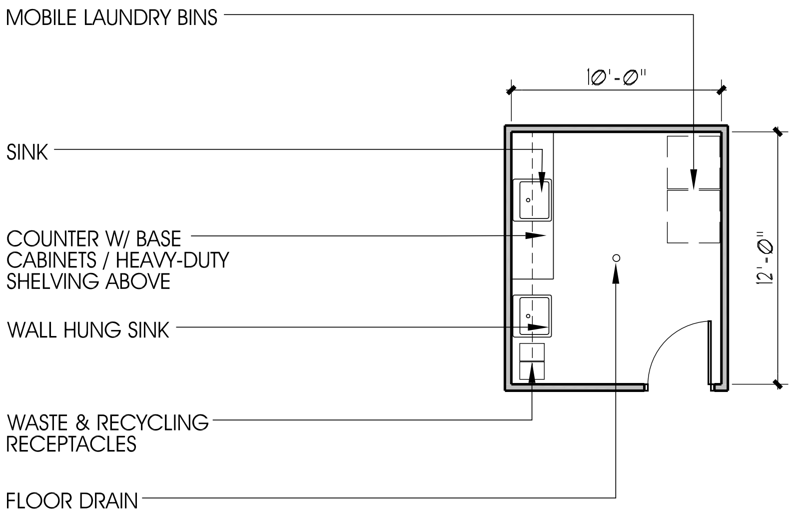
ROOM DATA

# OF OCCUPANTS	-
AREA (NASF)	100
CARPET / RUBBER BASE	
VCT / RUBBER BASE	●
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	●
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS: SOILED LAUNDRY
SPECIAL:

UTILITY: SOILED (LAUNDRY)

PROGRAM SPREADSHEET REFERENCE
1 C4b



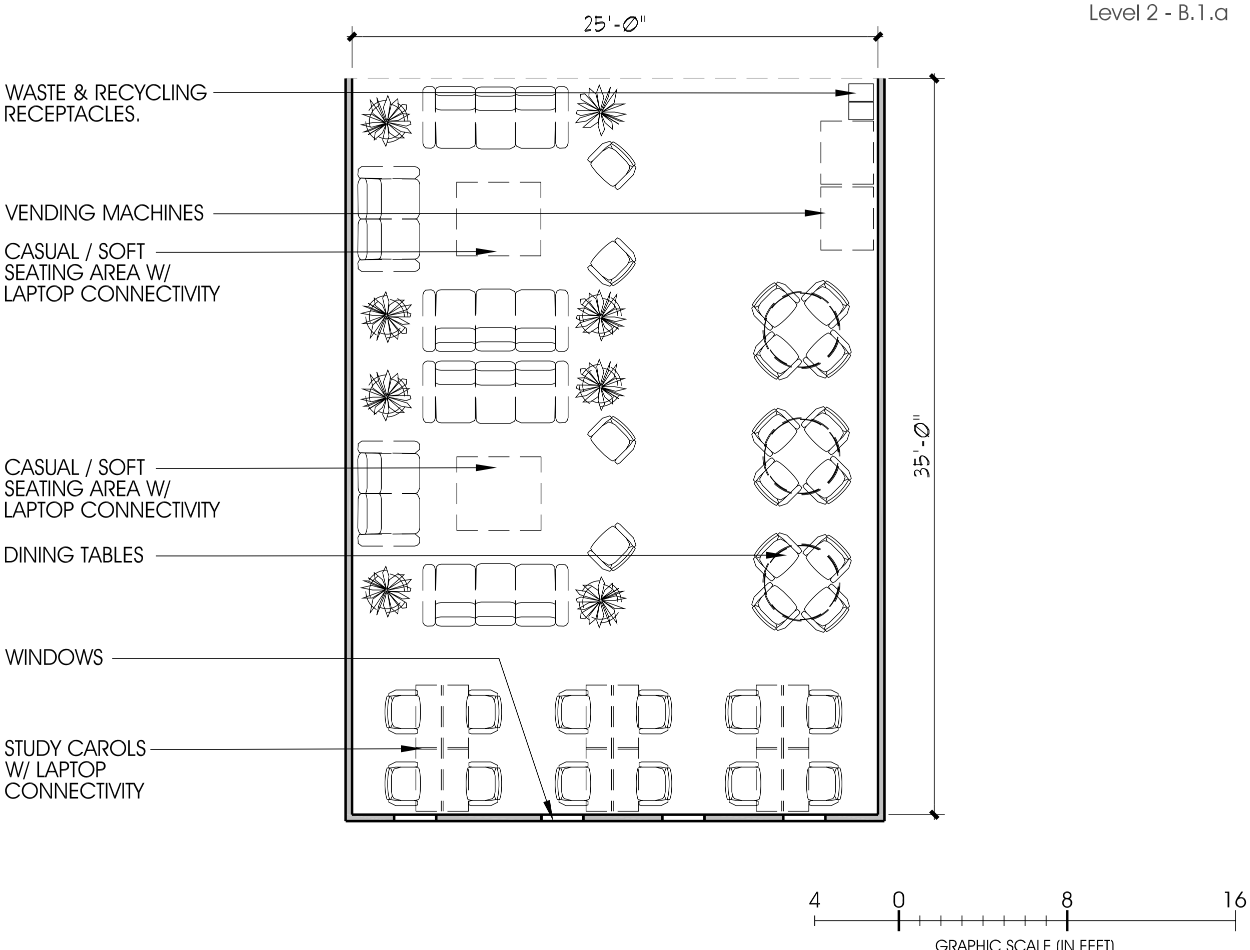
ROOM DATA

# OF OCCUPANTS	-
AREA (NASF)	120
CARPET / RUBBER BASE	
VCT / RUBBER BASE	●
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	●
FLOOR DRAIN	●
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS: CLEAN LINEN
SPECIAL:

STUDENT LOUNGE

PROGRAM SPREADSHEET REFERENCE
Level 2 - B.1.a



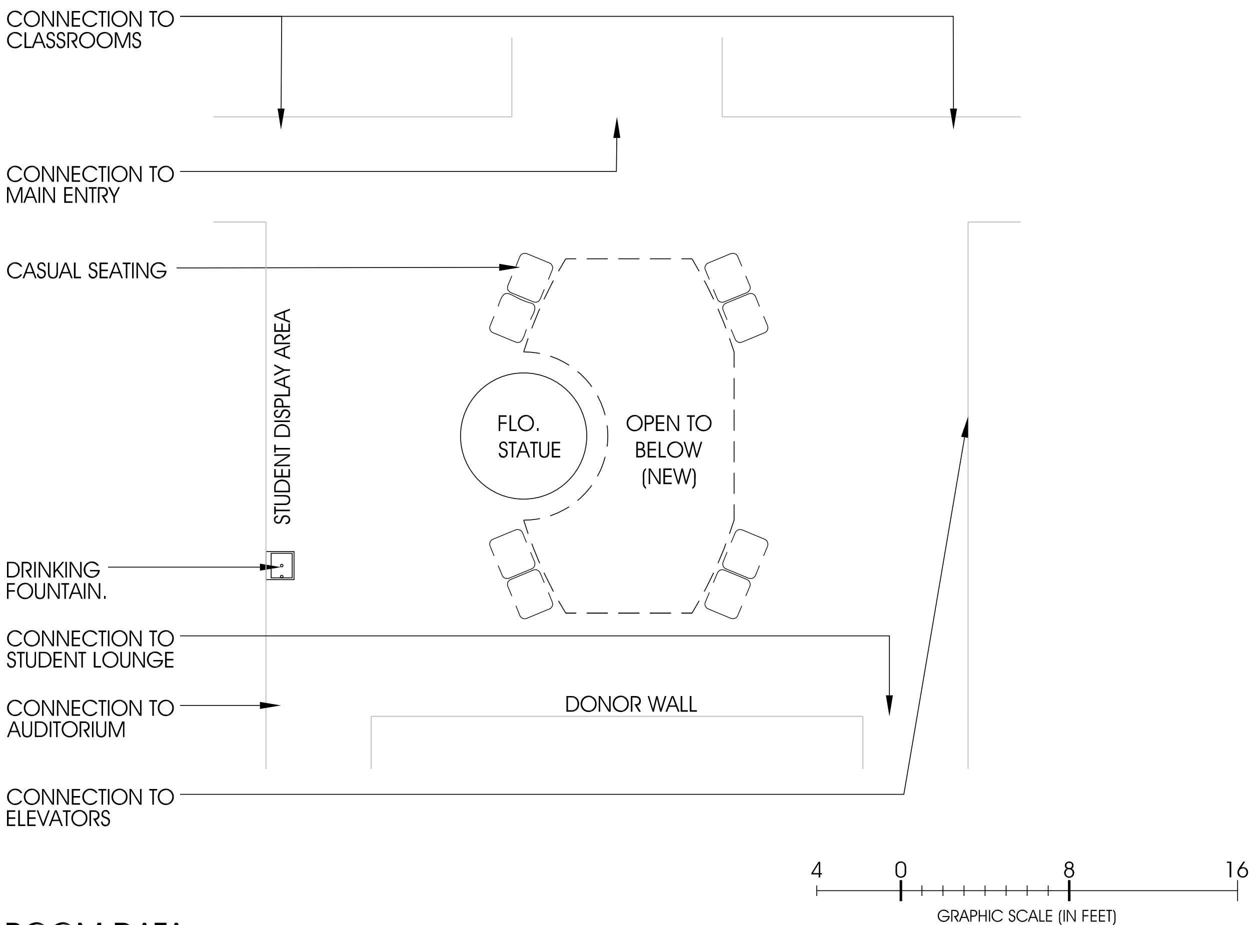
ROOM DATA

# OF OCCUPANTS	25
AREA (NASF)	875
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	
OTHER CEILING	EXP
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	●
WINDOWS / DAYLIGHT	●
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: CLASSROOMS, AUDITORIUM
SPECIAL:

LOBBY / LOUNGE / DISPLAY

PROGRAM SPREADSHEET REFERENCE
Level 2 - B.1.b



ROOM DATA

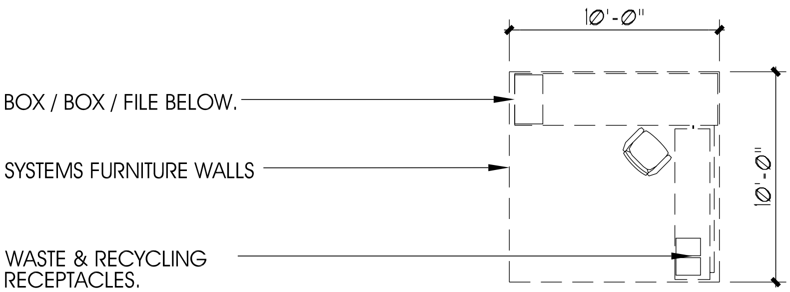
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	250	●			●	●	●		●	●							NR																

ADJACENCY REQUIREMENTS: MAIN ENTRY, MAIN VERTICAL CIRCULATION (ELEVATORS)
SPECIAL:

WORK STATION - 100

PROGRAM SPREADSHEET REFERENCE

Level 2 - C.1.b
Level 3 - K.1.b
Level 4 - A.1.c
Level 4 - E.1.f



ROOM DATA

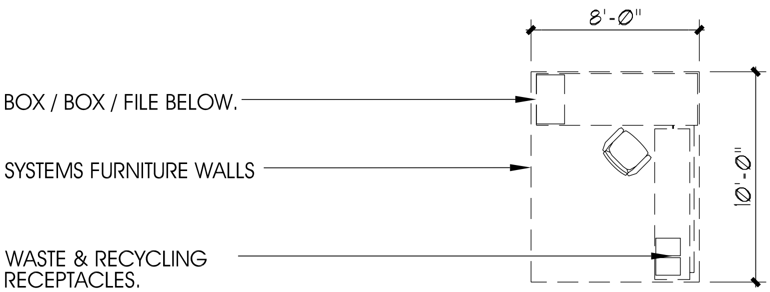
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	100	●				●												●					●	●									

ADJACENCY REQUIREMENTS:
SPECIAL:

WORK STATION - 80

PROGRAM SPREADSHEET REFERENCE

Level 2 - C.1.d
Level 5 - A.1.c



ROOM DATA

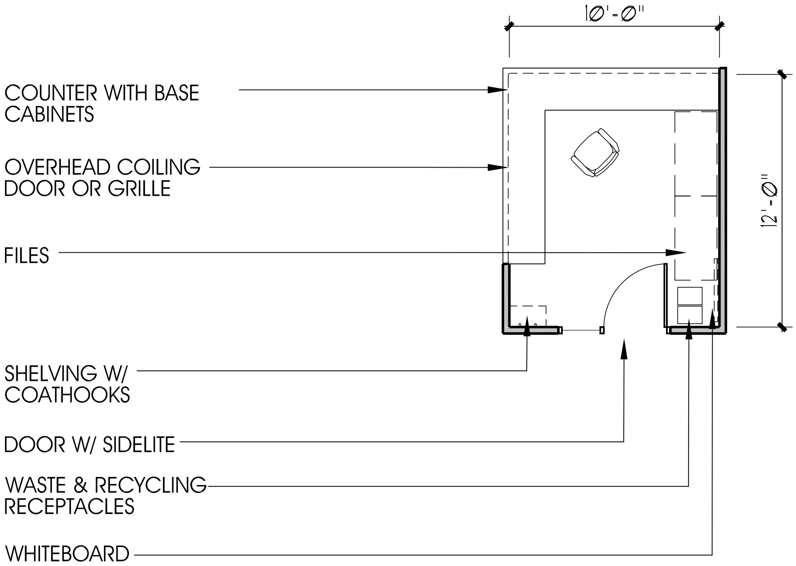
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	80	●				●																	●										

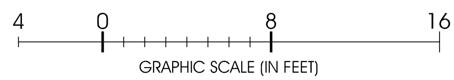
ADJACENCY REQUIREMENTS:
SPECIAL:

RECEPTION / SECRETARY

PROGRAM SPREADSHEET REFERENCE

Level 2 - C.1.b
Level 4 - A.1.d





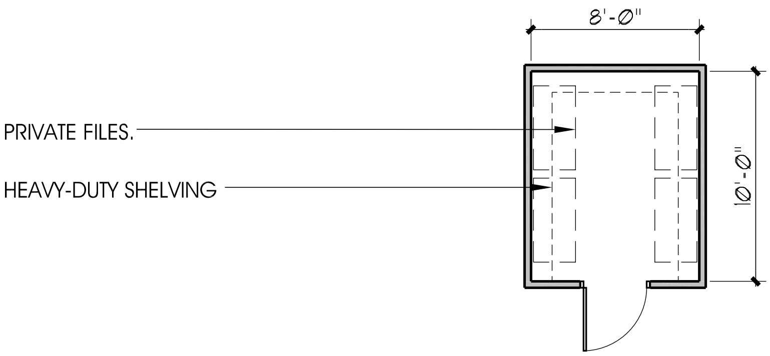
ROOM DATA

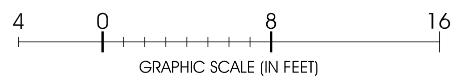
# OF OCCUPANTS	6
AREA (NASF)	90
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	●
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	●
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: SEATING / WAITING AREA
SPECIAL:

FILE STORAGE

PROGRAM SPREADSHEET REFERENCE
Level 2 - C.2.b





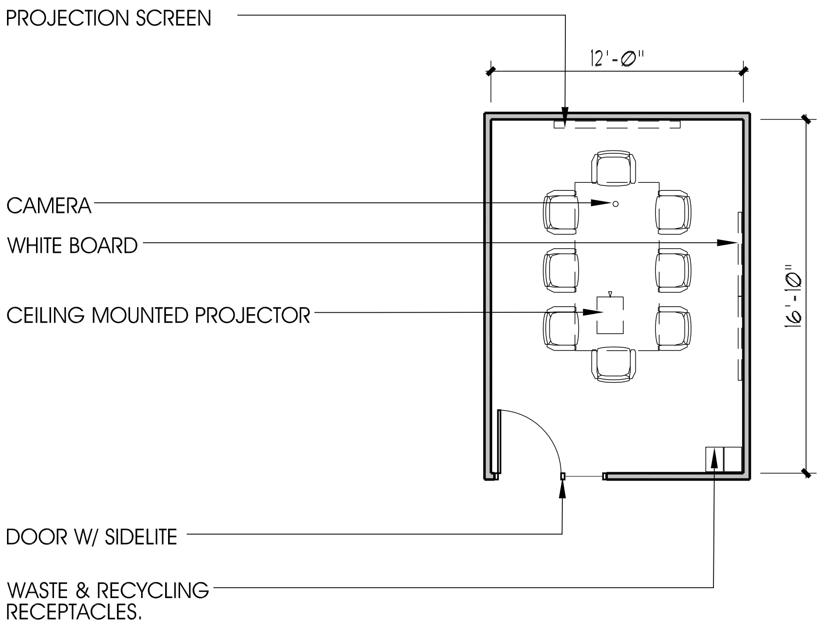
ROOM DATA

# OF OCCUPANTS	-
AREA (NASF)	80
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	●
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS:
SPECIAL:

CONFERENCE ROOM

PROGRAM SPREADSHEET REFERENCE
Level 2 - C.2.c



ROOM DATA

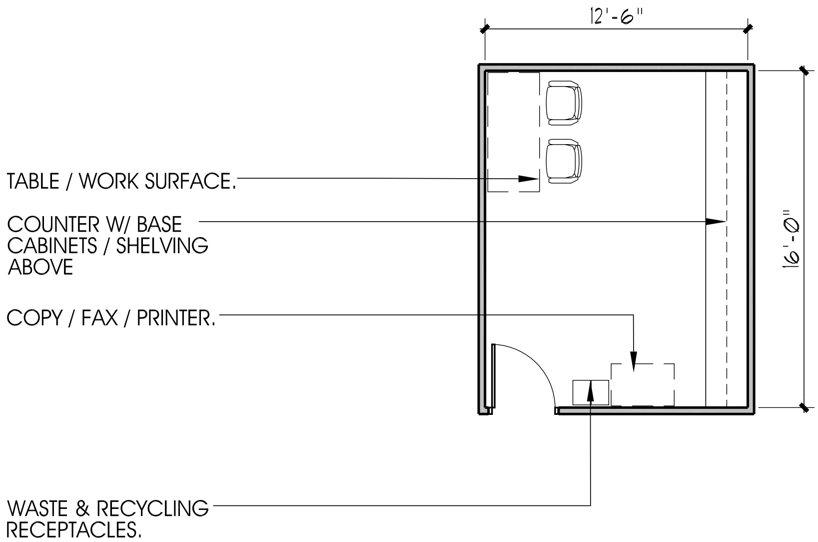
# OF OCCUPANTS	8
AREA (NASF)	200
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	●
CAMERA / MICROPHONE	●
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

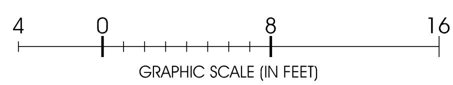
ADJACENCY REQUIREMENTS:
SPECIAL: EQUIP FOR DISTANCE LEARNING

WORK ROOM

PROGRAM SPREADSHEET REFERENCE

Level 2 - C.2.d
Level 4 - A.2.c





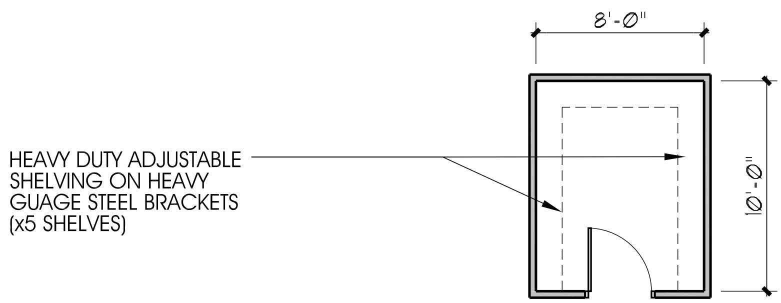
ROOM DATA

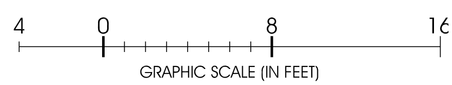
# OF OCCUPANTS	-
AREA (NASF)	200
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS:
SPECIAL:

GENERAL STORAGE

PROGRAM SPREADSHEET REFERENCE
Level 2 - C.2.e





ROOM DATA

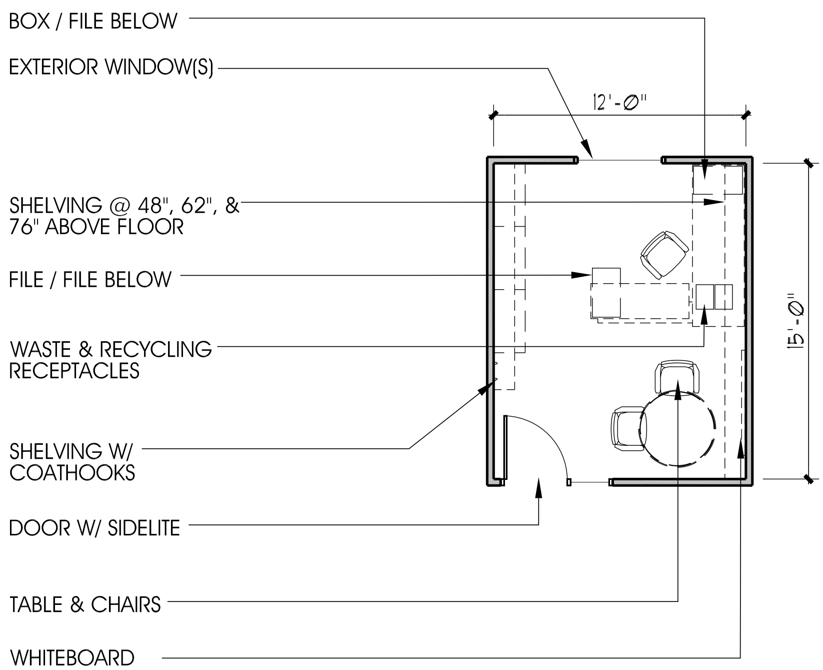
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	80	●				●			●			●	●																				●

ADJACENCY REQUIREMENTS:
SPECIAL:

PRIVATE OFFICE - 180

PROGRAM SPREADSHEET REFERENCE

Level 3 - A.1.a
Level 3 - F.1.a
Level 3 - G.1.a
Level 3 - H.1.a
Level 3 - K.1.a
Level 3 - L.1.a
Level 4 - B.1.a
Level 4 - C.1.a
Level 4 - D.1.a
Level 4 - D.1.c
Level 4 - D.1.d
Level 4 - E.1.a



4 0 8 16
GRAPHIC SCALE (IN FEET)

ROOM DATA

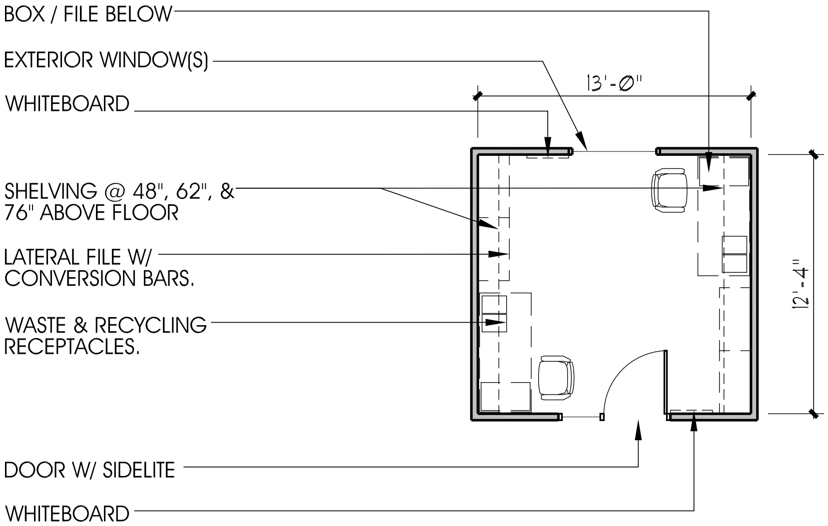
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	180	●				●			●				●		●	●	●	●	●	●	●		●										

ADJACENCY REQUIREMENTS:
SPECIAL:

SHARED OFFICE - 160

PROGRAM SPREADSHEET REFERENCE

Level 3 - A.1.b
Level 3 - B.1.a
Level 3 - D.1.a
Level 3 - G.1.c
Level 3 - J.1.b



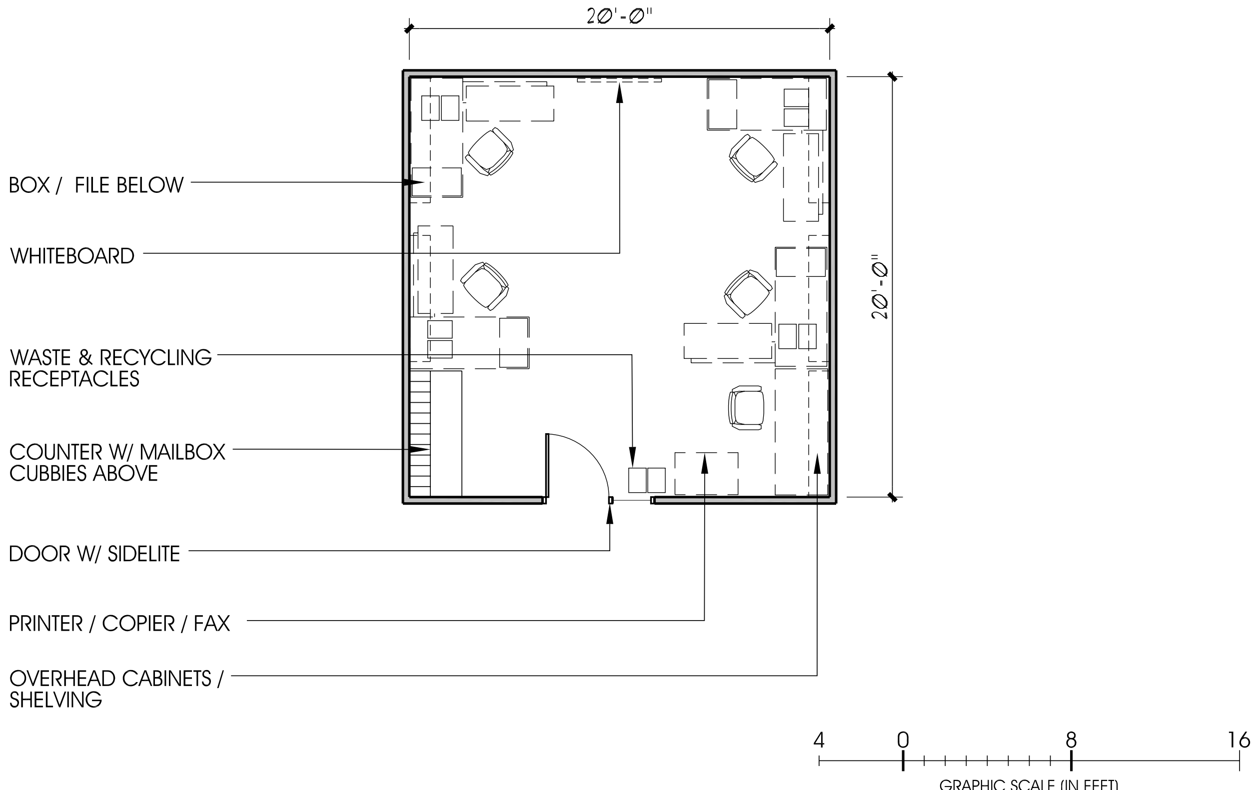
ROOM DATA

# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
2	160	●				●			●				●		●	●	●	●	●		●		●										

ADJACENCY REQUIREMENTS:
SPECIAL:

SHARED OFFICE / WORK ROOM

PROGRAM SPREADSHEET REFERENCE
Level 3 - A.1.c



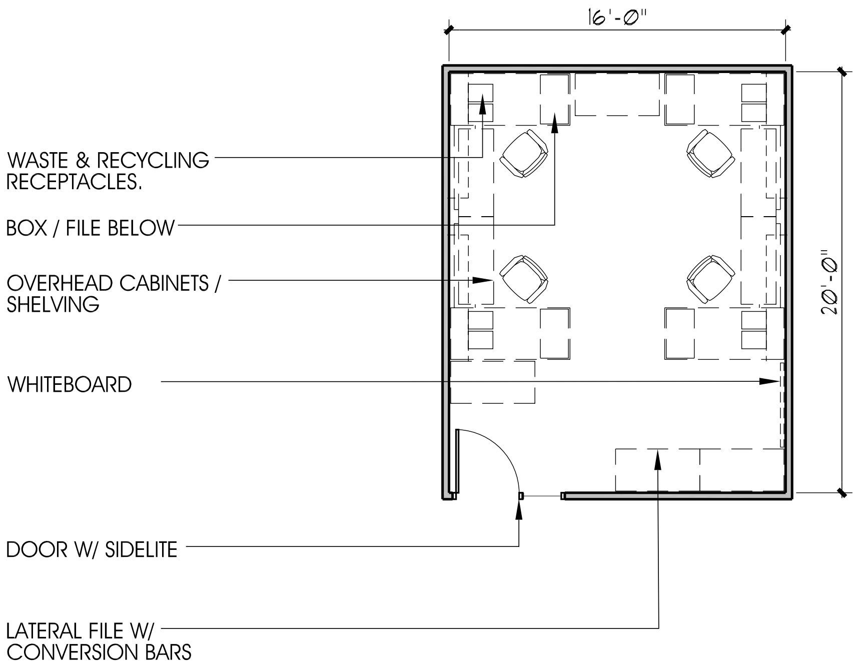
ROOM DATA

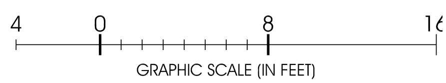
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
5	400	●				●			●			●	●		●		NR	●	●				●										

ADJACENCY REQUIREMENTS:
SPECIAL:

OFFICE - 4 PERSON

PROGRAM SPREADSHEET REFERENCE
Level 3 - A.1.d





ROOM DATA

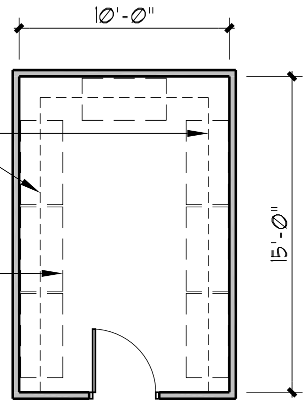
# OF OCCUPANTS	4
AREA (NASF)	320
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	●
FILES	●
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

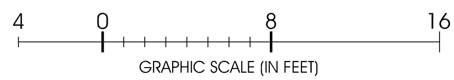
ADJACENCY REQUIREMENTS:
SPECIAL:

SECURE STORAGE

PROGRAM SPREADSHEET REFERENCE

Level 3 - A.2.a
Level 4 - B.2.c





ROOM DATA

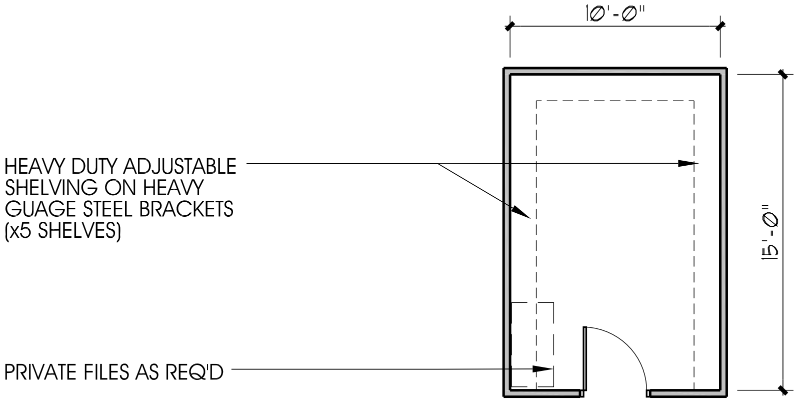
# OF OCCUPANTS	-
AREA (NASF)	150
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	●
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS: FACULTY PRACTICE - BIRTHCARE/HEALTHCARE
SPECIAL:

STORAGE

PROGRAM SPREADSHEET REFERENCE

Level 3 - A.2.a
Level 3 - A.2.b
Level 3 - H.2.a
Level 3 - M.2.a
Level 3 - M.2.b
Level 3 - M.2.c
Level 4 - B.2.a
Level 4 - B.2.b
Level 4 - B.2.c



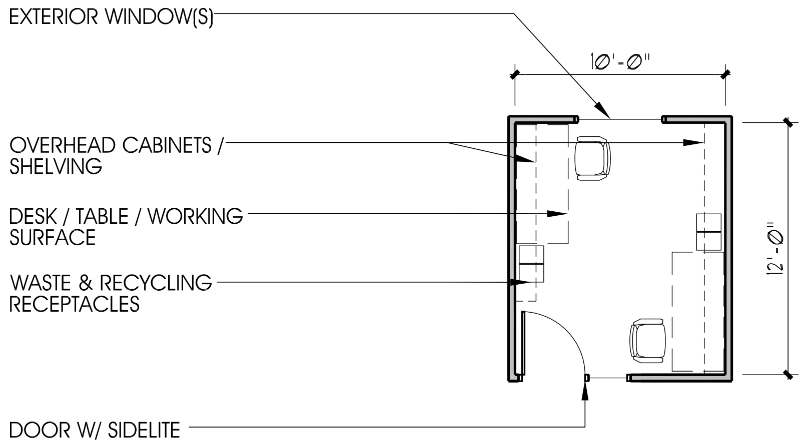
ROOM DATA

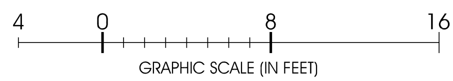
# OF OCCUPANTS	-
AREA (NASF)	150
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS:
SPECIAL:

SHARED OFFICE - 120

PROGRAM SPREADSHEET REFERENCE
Level 3 - C.1.a





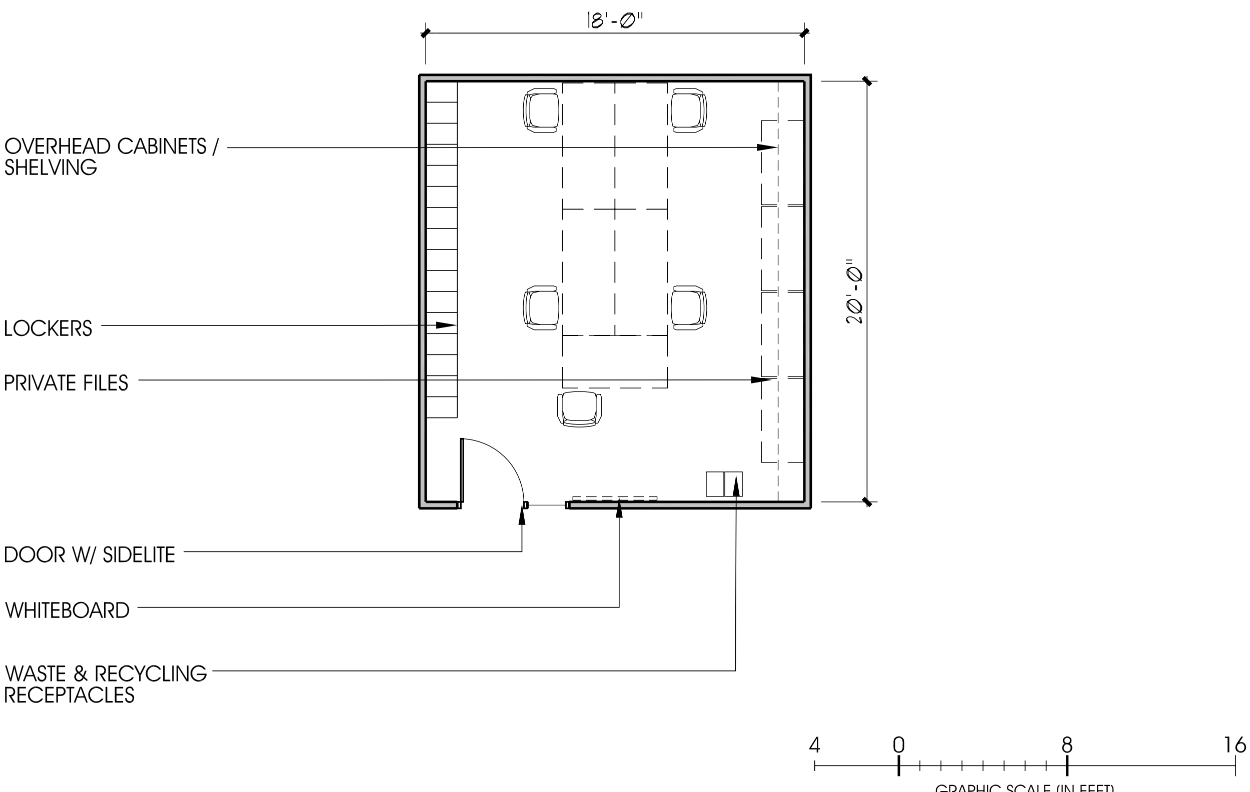
ROOM DATA

# OF OCCUPANTS	2
AREA (NASF)	120
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	●
WINDOWS / DAYLIGHT	●
DESK / CHAIRS	●
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

TOUCH DOWN SPACE

PROGRAM SPREADSHEET REFERENCE
Level 3 - G.1.d



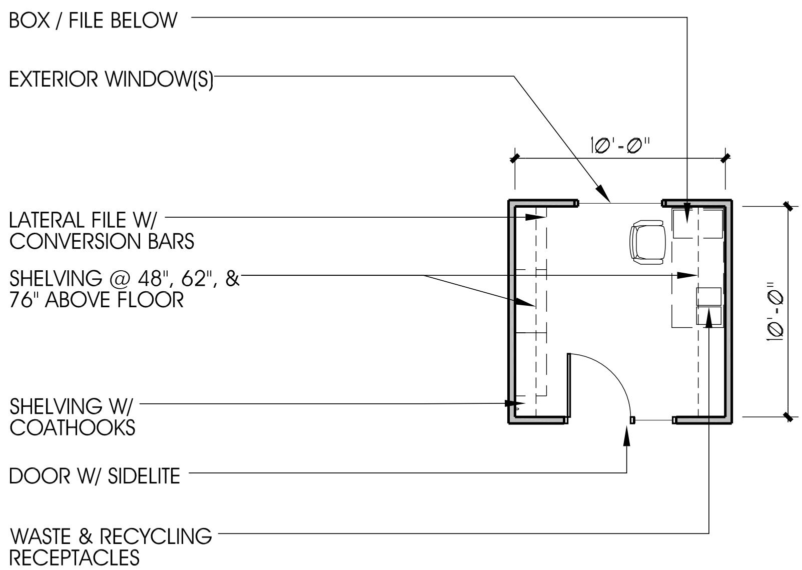
ROOM DATA

# OF OCCUPANTS	10
AREA (NASF)	360
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	●
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

PRIVATE OFFICE - 100

PROGRAM SPREADSHEET REFERENCE
Level 3 - H.1.c



4 0 8 16
GRAPHIC SCALE (IN FEET)

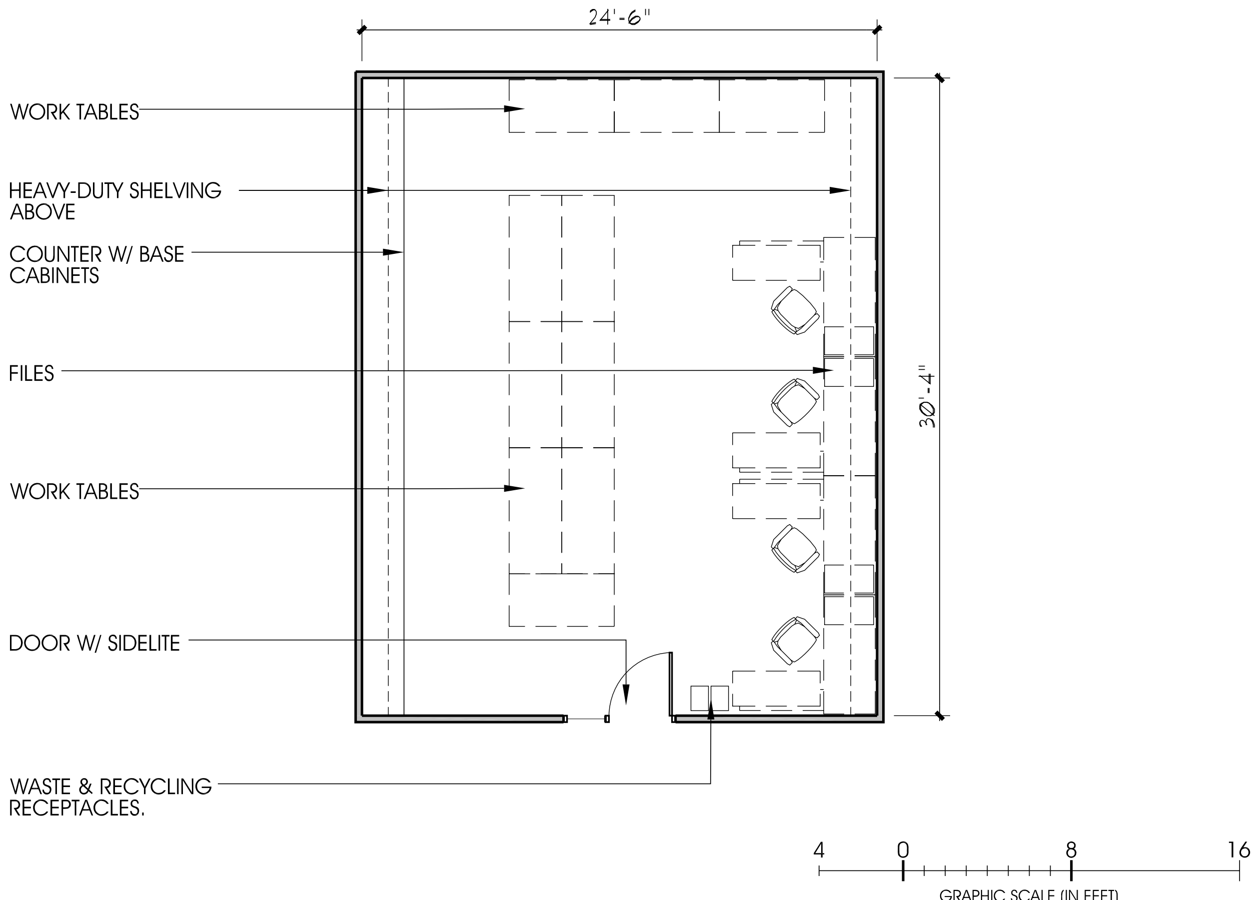
ROOM DATA

# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	100	●				●			●			●	●		●	●	●	●					●										

ADJACENCY REQUIREMENTS:
SPECIAL:

IT SUPPORT

PROGRAM SPREADSHEET REFERENCE
Level 3 - M.1.a



ROOM DATA

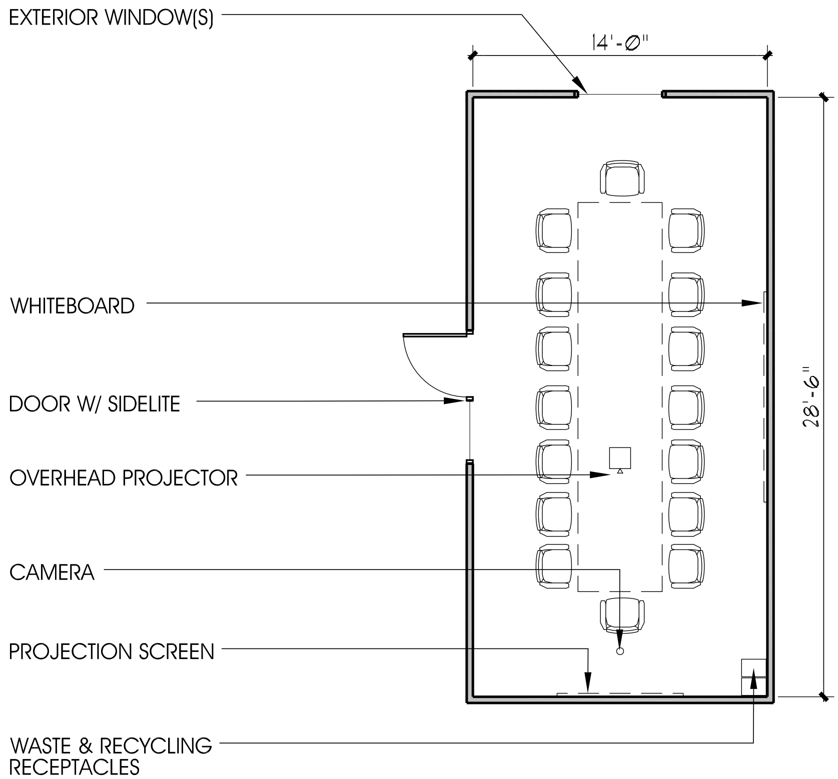
# OF OCCUPANTS	4
AREA (NASF)	745
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	●
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	●
FILES	●
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

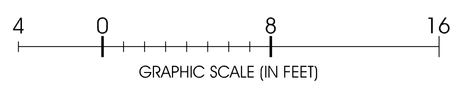
ADJACENCY REQUIREMENTS: IT STORAGE
SPECIAL:

CONFERENCE ROOM

PROGRAM SPREADSHEET REFERENCE

Level 3 - N.1.a
Level 4 - G.1.a





ROOM DATA

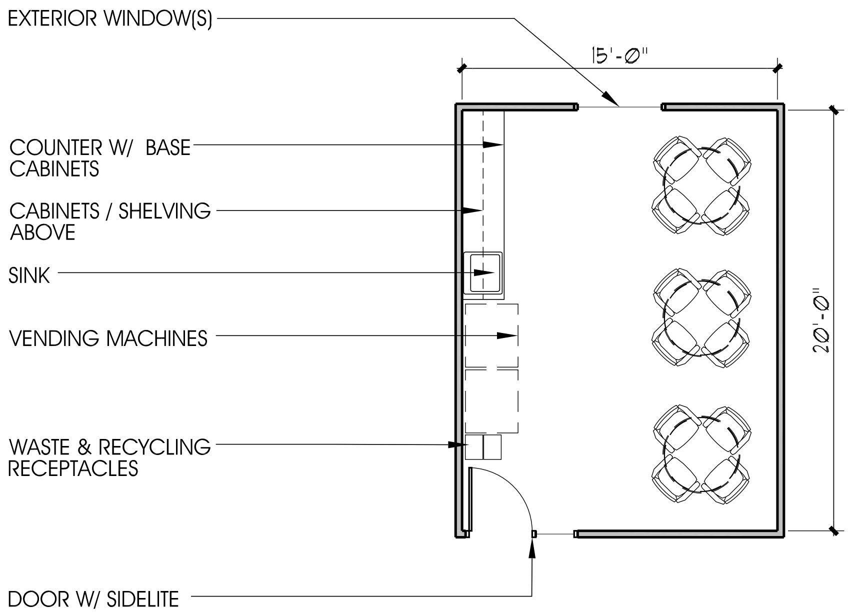
# OF OCCUPANTS	16
AREA (NASF)	400
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	●
CAMERA / MICROPHONE	●
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

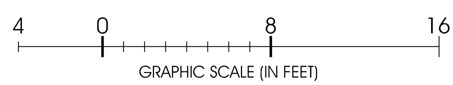
ADJACENCY REQUIREMENTS:
SPECIAL: EQUIP FOR DISTANCE LEARNING

BREAK ROOM

PROGRAM SPREADSHEET REFERENCE

Level 3 - N.1.b
Level 4 - G.1.b





ROOM DATA

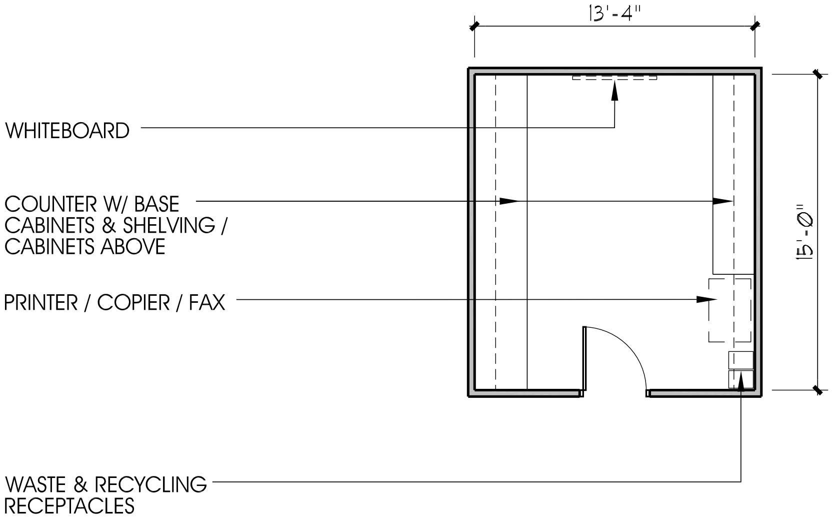
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
12	300		●			●			●		●		●				NR			●								●					●

ADJACENCY REQUIREMENTS:
SPECIAL:

COPY / FAX / PRINTING ROOM

PROGRAM SPREADSHEET REFERENCE

Level 3 - N.1.c
Level 4 - A.2.e
Level 4 - G.1.c
Level 5 - C.1.b



ROOM DATA

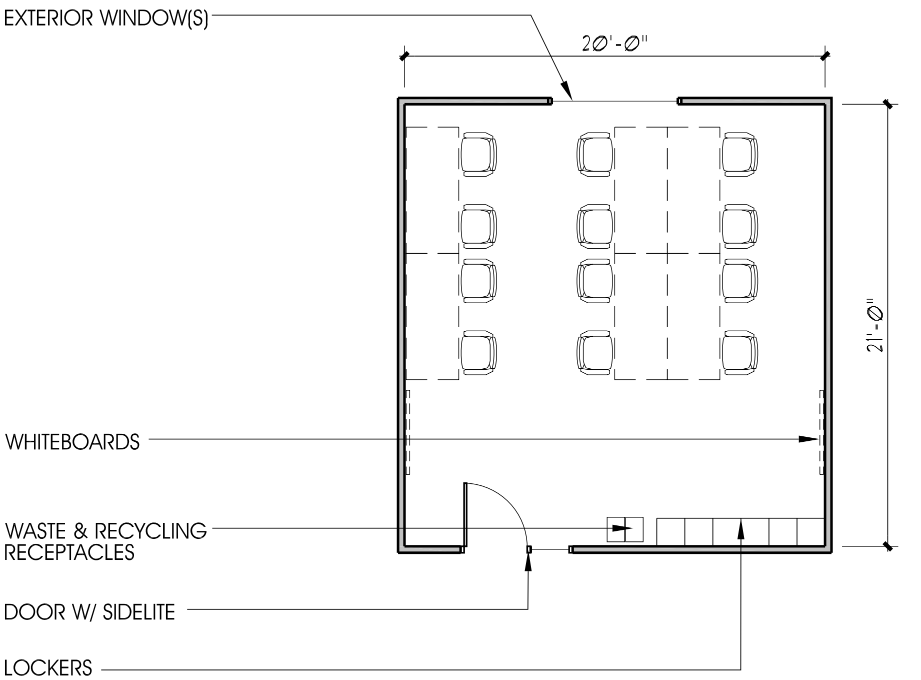
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	200	●				●			●		●	●	●								●		●										●

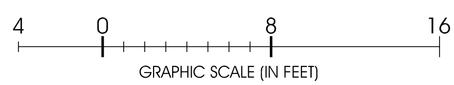
ADJACENCY REQUIREMENTS:
SPECIAL:

TOUCH DOWN SPACE

PROGRAM SPREADSHEET REFERENCE

Level 3 - N.1.d
Level 4 - G.1.d





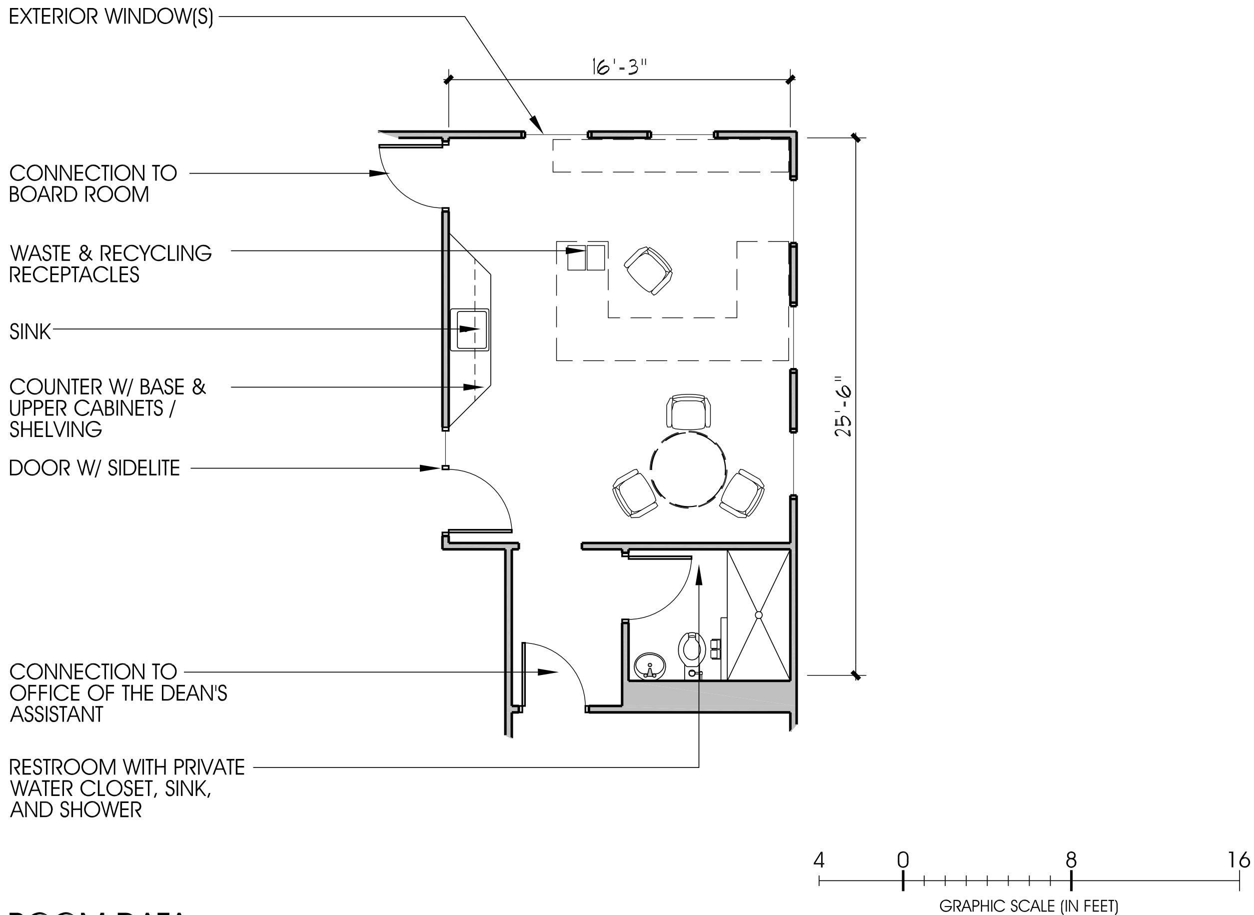
ROOM DATA

# OF OCCUPANTS	12
AREA (NASF)	420
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	●
WINDOWS / DAYLIGHT	●
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

DEAN'S OFFICE

PROGRAM SPREADSHEET REFERENCE
Level 4 - A.1.a



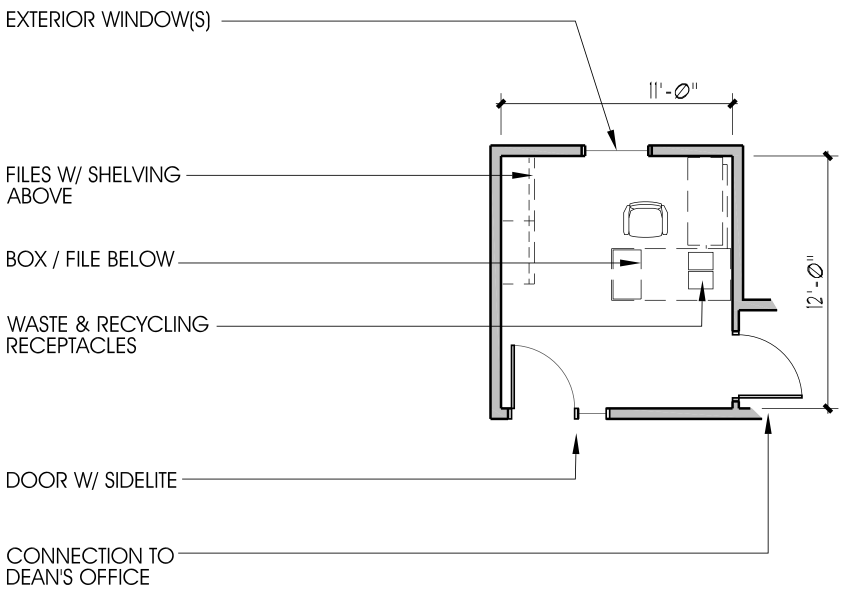
ROOM DATA

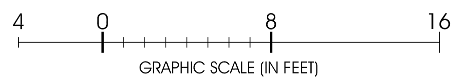
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	400	●				●			●	WD	●		●			●	●	●	●	●	●		●					●					

ADJACENCY REQUIREMENTS: BOARDROOM, PRIVATE RESTROOM, DEAN'S ASSISTANT
SPECIAL:

DEAN'S ASSISTANT

PROGRAM SPREADSHEET REFERENCE
Level 4 - A.1.b





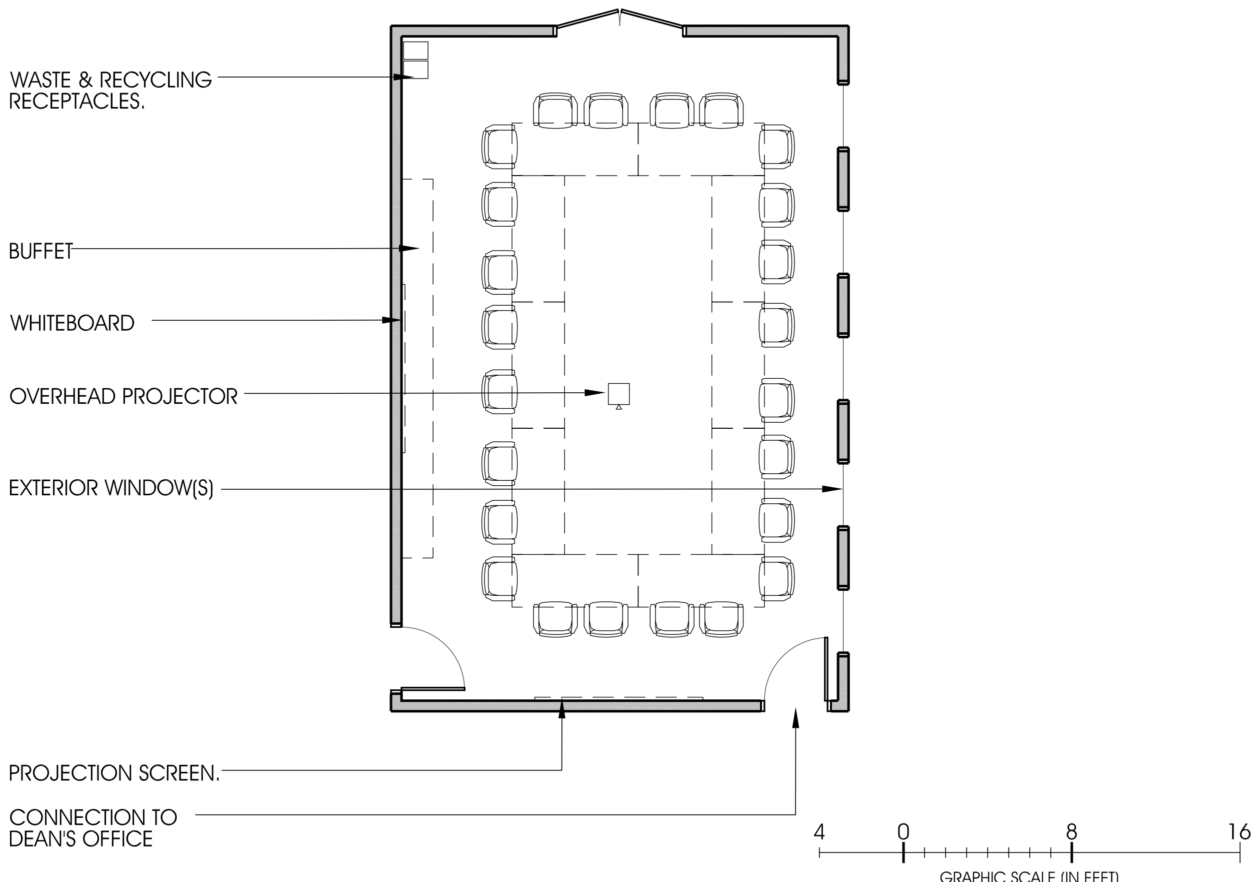
ROOM DATA

# OF OCCUPANTS	1
AREA (NASF)	120
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	●
WINDOWS / DAYLIGHT	●
DESK / CHAIRS	●
FILES	●
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS: DEAN'S OFFICE
SPECIAL:

BOARD ROOM

PROGRAM SPREADSHEET REFERENCE
Level 4 - A.2.b



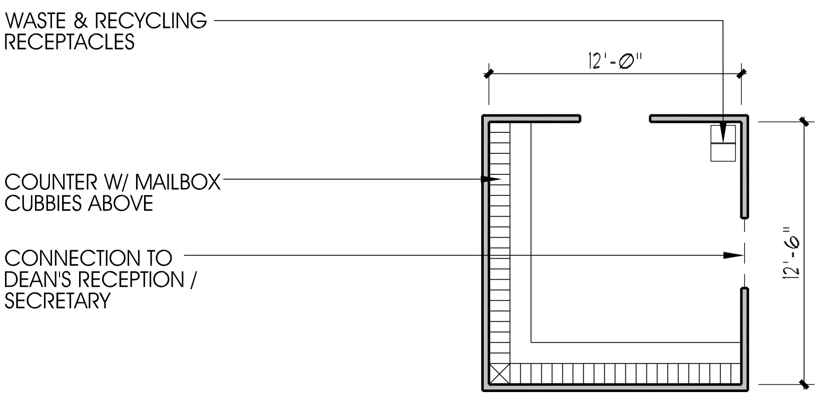
ROOM DATA

# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
24	655	●				●			●	WD			●	●		●	●			●	●		●		●	●							

ADJACENCY REQUIREMENTS: DEAN'S OFFICE, BREAKROOM (SINK, REFRIDGERATOR, REFRESHMENTS), RESTROOM
SPECIAL:

MAIL ROOM

PROGRAM SPREADSHEET REFERENCE
Level 4 - A.2.d



4 0 8 16
GRAPHIC SCALE (IN FEET)

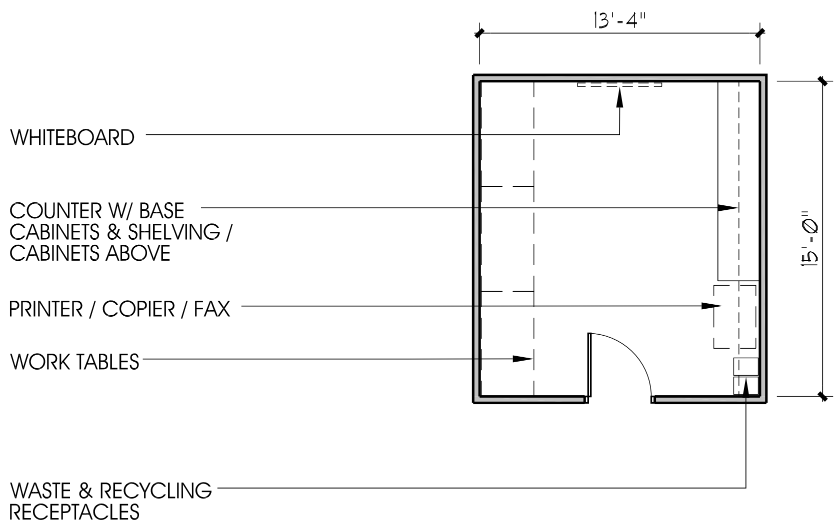
ROOM DATA

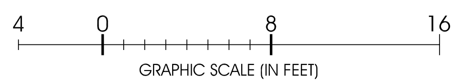
# OF OCCUPANTS	-
AREA (NASF)	150
CARPET / RUBBER BASE	
VCT / RUBBER BASE	●
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	●

ADJACENCY REQUIREMENTS: ELEVATORS, DEAN'S RECEPTION / SECRETARY
SPECIAL:

DEAN'S WORK ROOM

PROGRAM SPREADSHEET REFERENCE
Level 4 - A.2.c





ROOM DATA

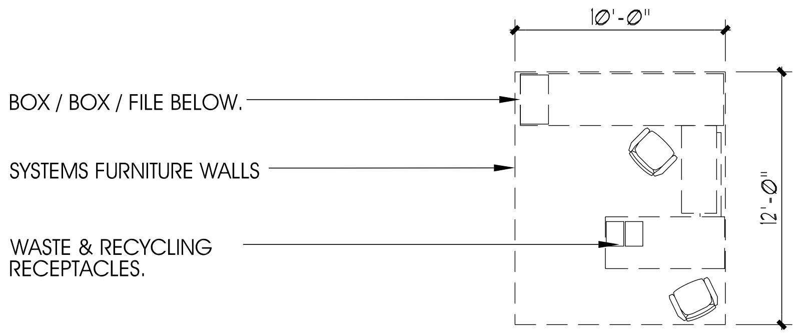
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	200		●			●			●		●	●	●								●		●										●

ADJACENCY REQUIREMENTS:
SPECIAL:

WORK STATION - 120

PROGRAM SPREADSHEET REFERENCE

Level 4 - B.1.c
Level 4 - D.1.b
Level 4 - D.1.e



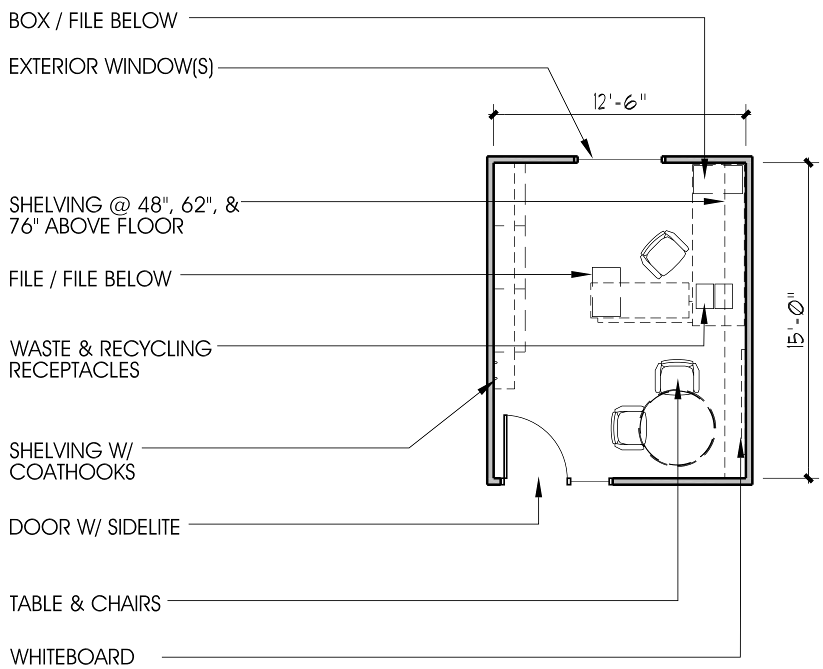
ROOM DATA

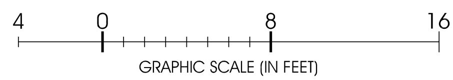
# OF OCCUPANTS	1
AREA (NASF)	120
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	●
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	●
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

PRIVATE OFFICE - 185

PROGRAM SPREADSHEET REFERENCE
Level 5 - B.1.a





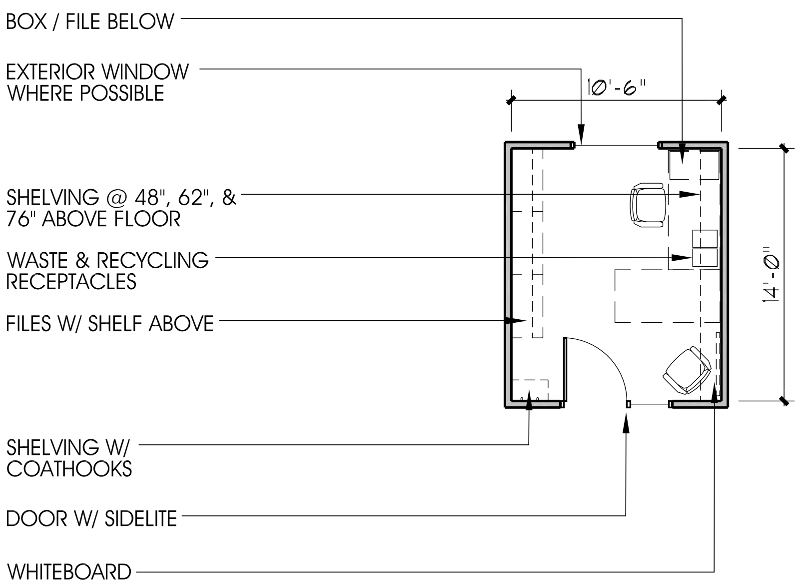
ROOM DATA

# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	185	●				●			●				●		●	●	●	●	●	●	●		●										

ADJACENCY REQUIREMENTS:
SPECIAL:

PRIVATE OFFICE - 144

PROGRAM SPREADSHEET REFERENCE
Level 5 - B.1.b



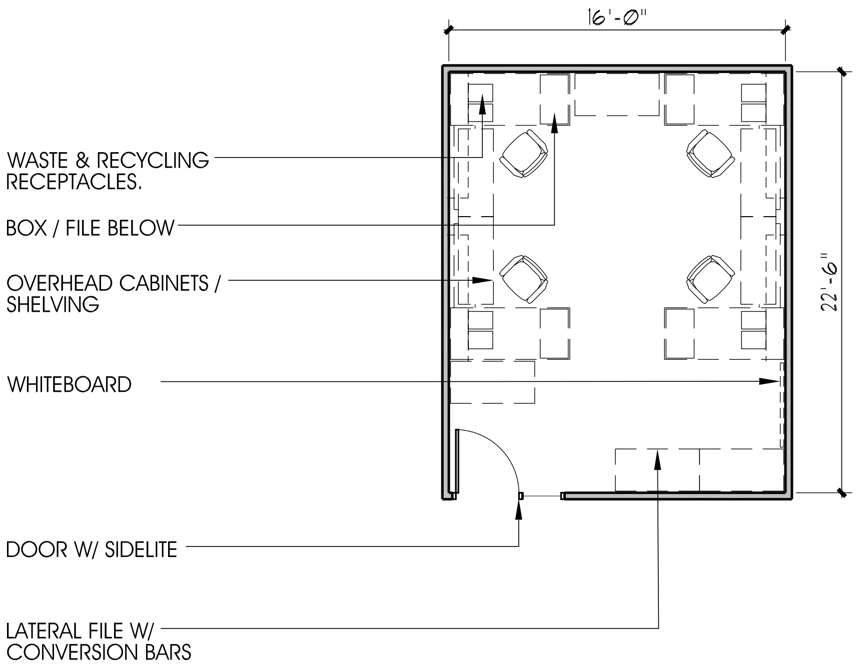
ROOM DATA

# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
1	144	●				●			●				●		●	●	●	●	●	●	●		●										

ADJACENCY REQUIREMENTS:
SPECIAL:

RESEARCH SHARED OFFICE - 4 PERSON

PROGRAM SPREADSHEET REFERENCE
Level 5 - B.1.d



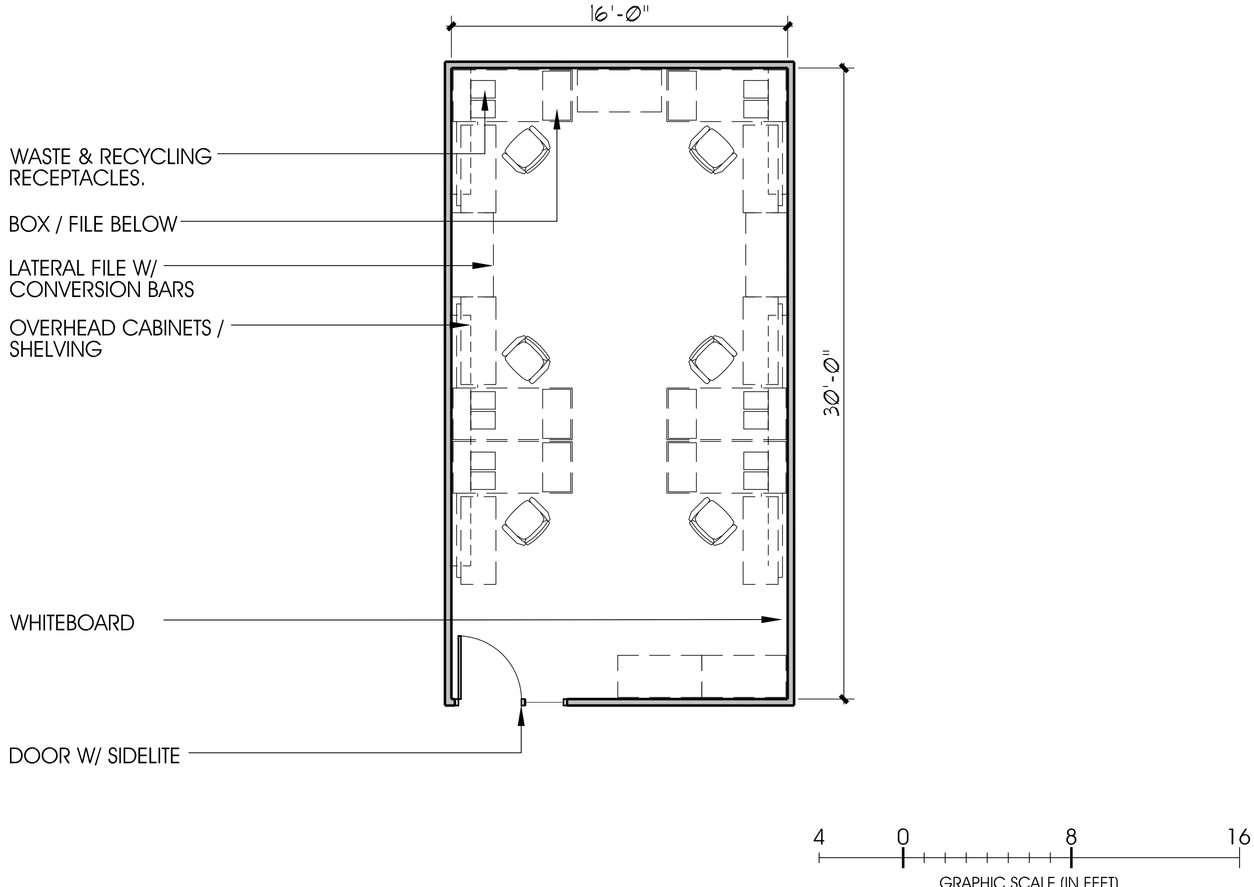
ROOM DATA

# OF OCCUPANTS	AREA (NASF)		CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH		LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT		PAINTED GYP. BD. WALL	OTHER WALL FINISH		BASE / UPPER CABINETS	HEAVY-DUTY SHELVING		STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT		DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE		PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD		SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR		HOSPITAL HEADWALL		LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
4	360		●					●				●						●		●		NR		●	●		●			●													

ADJACENCY REQUIREMENTS:
SPECIAL:

RESEARCH SHARED OFFICE - 6 PERSON

PROGRAM SPREADSHEET REFERENCE
Level 5 - B.1.e



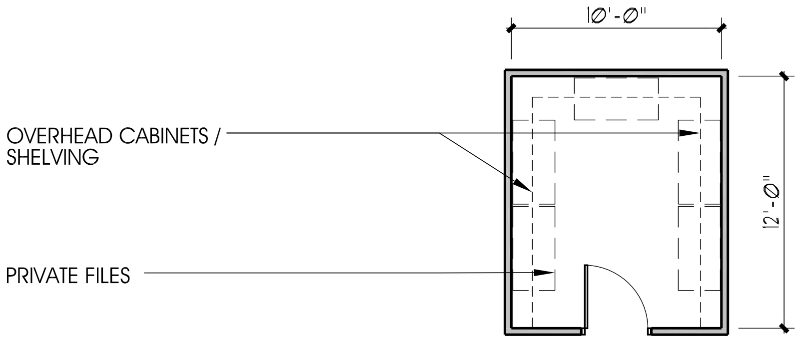
ROOM DATA

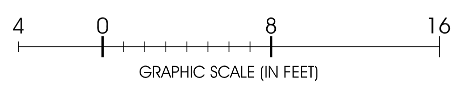
# OF OCCUPANTS	4
AREA (NASF)	480
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	●
FILES	●
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	
CAMERA / MICROPHONE	
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

FILE STORAGE

PROGRAM SPREADSHEET REFERENCE
Level 5 - B.1.f





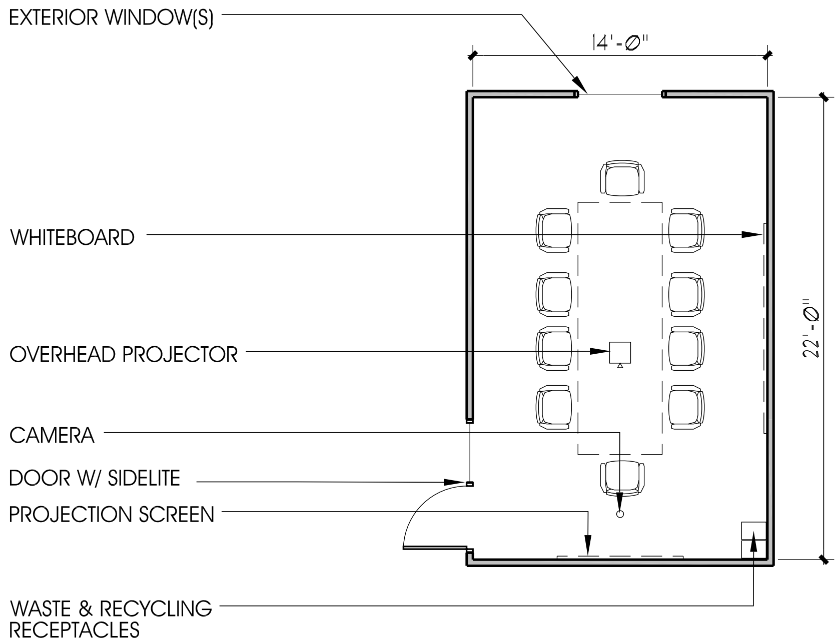
ROOM DATA

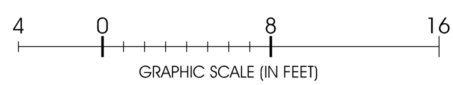
# OF OCCUPANTS	AREA (NASF)	CARPET / RUBBER BASE	VCT / RUBBER BASE	TILE FLOOR / TILE BASE	OTHER FLOOR FINISH	LAY-IN CEILING	OTHER CEILING	CRITICAL CEILING HEIGHT	PAINTED GYP. BD. WALL	OTHER WALL FINISH	BASE / UPPER CABINETS	HEAVY-DUTY SHELVING	STANDARD DOOR	OVERSIZED DOOR WIDTH (IN FEET)	SIDE LITE	BLINDS	WINDOWS / DAYLIGHT	DESK / CHAIRS	FILES	TABLE / CHAIRS	WHITE BOARD / TACK BOARD	HOSPITAL BED / OVERBED TABLE	PHONE / DATA OUTLET(S)	INTERCOM SYSTEM	PROJECTOR / SCREEN / SPEAKERS	CAMERA / MICROPHONE	SECURITY / CARD	SINK W/ PAPER TOWEL & HAND SANITIZER	FLOOR DRAIN	SUCTION / COMPRESSED AIR	HOSPITAL HEADWALL	LIGHT FIXTURE TYPE	OCCUPANCY SENSOR FOR LIGHTS
-	120	●				●			●			●	●						●								●						●

ADJACENCY REQUIREMENTS:
SPECIAL:

CONFERENCE ROOM

PROGRAM SPREADSHEET REFERENCE
Level 5 - C.1.a





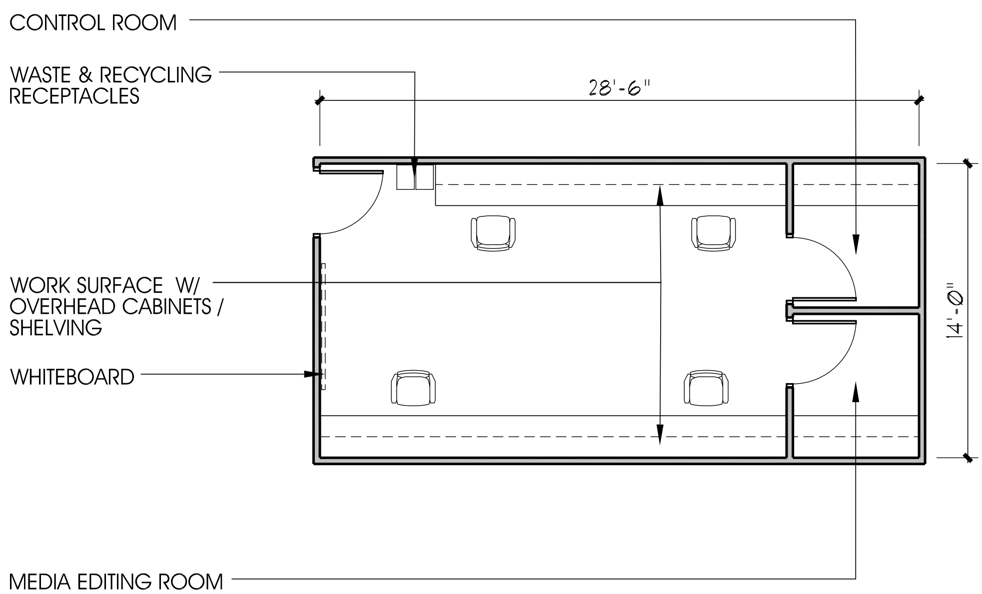
ROOM DATA

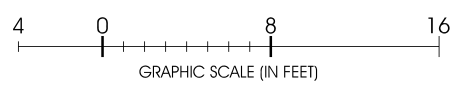
# OF OCCUPANTS	16
AREA (NASF)	300
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	●
BLINDS	
WINDOWS / DAYLIGHT	NR
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	●
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	●
CAMERA / MICROPHONE	●
SECURITY / CARD	
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL: EQUIP FOR DISTANCE LEARNING

QUALITATIVE LAB

PROGRAM SPREADSHEET REFERENCE
Level 5 - B.1.g





ROOM DATA

# OF OCCUPANTS	12
AREA (NASF)	400
CARPET / RUBBER BASE	●
VCT / RUBBER BASE	
TILE FLOOR / TILE BASE	
OTHER FLOOR FINISH	
LAY-IN CEILING	●
OTHER CEILING	
CRITICAL CEILING HEIGHT	
PAINTED GYP. BD. WALL	●
OTHER WALL FINISH	
BASE / UPPER CABINETS	●
HEAVY-DUTY SHELVING	
STANDARD DOOR	●
OVERSIZED DOOR WIDTH (IN FEET)	
SIDE LITE	
BLINDS	
WINDOWS / DAYLIGHT	
DESK / CHAIRS	
FILES	
TABLE / CHAIRS	
WHITE BOARD / TACK BOARD	●
HOSPITAL BED / OVERBED TABLE	
PHONE / DATA OUTLET(S)	●
INTERCOM SYSTEM	
PROJECTOR / SCREEN / SPEAKERS	●
CAMERA / MICROPHONE	●
SECURITY / CARD	●
SINK W/ PAPER TOWEL & HAND SANITIZER	
FLOOR DRAIN	
SUCTION / COMPRESSED AIR	
HOSPITAL HEADWALL	
LIGHT FIXTURE TYPE	
OCCUPANCY SENSOR FOR LIGHTS	

ADJACENCY REQUIREMENTS:
SPECIAL:

Building Cost Summary 06

Building Cost Summary

Basis of Estimate

The construction cost estimate on the following pages has been prepared to reflect the anticipated cost of the proposed renovation to the College of Nursing Building at the University of Utah. This construction cost estimate is based on the programmatic information included in this document, including the DFCM High Performance Building Rating System and LEED Silver certification design requirements, commissioning, and measurement and pricing of quantities wherever information has been provided. Unit rates have been obtained from historical records, along with discussions with contractors. The unit rates provided include labor, material, and equipment that reflect current bid costs in the Salt Lake City area. All subcontractor unit rates include the individual subcontractor's overhead and profit, unless stated otherwise.

The following items are excluded:

- Financing charges and expenses
- Project phasing costs
- Limited/restricted working hours

The following items may change the estimated costs, and are not limited to:

- Unforeseen or hidden site utility conditions or capacities

- Modifications to the scope of work represented by this construction cost estimate

The following assumptions have been made:

- Construction takes place during normal working hours

- The CM/GC and subcontractors will have sufficient/temporary site staging and site storage within or adjacent to the vicinity of the construction.

This construction cost estimate reflects current costs. Escalation has been included to represent an anticipated construction start date of June 2009.

This construction cost estimate reflects a design contingency of 10%, to allow for items not included in the program documentation (undefined at this stage of project development).

The construction cost estimate has been based on a competitive open bid situation with a maximum of three bidders for all items of subcontracted work. Please note that Parametrix has no control over the costs of labor, materials, equipment, contractor's methods, or the current competitive bidding market. This represents Parametrix's best judgement as a professional construction consultant. Parametrix does not guarantee the proposals, bids or that the overall construction cost will not vary from the estimated construction costs provided within this program document.

CONSTRUCTION COST ESTIMATE

M A S T E R S U M M A R Y

SECTION		AREA	UNIT	COST/SF	COST
CURRENT CONSTRUCTION COST:					
REMODEL		87,300	GSF	178.58	$15,589,935
SITE					$376,740
TOTAL (Construction)					$15,966,675
ADD OPTION: LEED Gold Rating	5.0%				$798,334

NOTES: Costs are for Construction only.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of June 2009.

CONSTRUCTION COST ESTIMATE

R E M O D E L   S U M M A R Y

SECTION		AREA	UNIT	COST/SF	COST
ARCHITECTURAL		87,300	GSF	51.66	$4,509,976
STRUCTURAL		87,300	GSF	14.36	$1,253,728
MECHANICAL		87,300	GSF	40.19	$3,508,300
ELECTRICAL		87,300	GSF	23.20	$2,025,050
SUB TOTAL		87,300	GSF	129.40	$11,297,054
GENERAL CONDITIONS	10.0%				$1,129,705
BONDING	1.0%				$112,971
OVERHEAD & PROFIT	7.0%				$790,794
SUB TOTAL		87,300	GSF	152.70	$13,330,524
DESIGN CONTINGENCY	10.0%				$1,129,705
INFLATION TO BID DATE (June 2009)	10.0%				$1,129,705
TOTAL (Construction)		87,300	GSF	178.58	$15,589,935

NOTES: Costs are for Construction only.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of June 2009.

CONSTRUCTION COST ESTIMATE

R E M O D E L   D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
ARCHITECTURAL				
DEMOLITION				
Remove Exterior Perimeter Walls	6,300	SF	8.00	$50,400
Remove Exterior Windows	11,720	SF	3.50	$41,020
Remove Interior Partitions & Doors	62,280	SF	4.00	$249,120
Remove Finishes	71,600	SF	1.50	$107,400
Remove Specialties & Equipment	71,600	SF	1.00	$71,600
			5.95	$519,540
ROOF				
Patch Roof (New Penetrations)	1	LS	15,000	$15,000
			0.17	$15,000
EXTERIOR WALLS				
Brick Veneer, Metal Studs, Batt Insul, Gyp Bd	3,416	SF	42.00	$143,472
			1.64	$143,472

CONSTRUCTION COST ESTIMATE

R E M O D E L   D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
ARCHITECTURAL - Continued				
INTERIOR WALLS				
Metal Studs, Sound Insulation & Gypsum Board	96,200	SF	9.00	$865,800
			9.92	$865,800
DOORS AND WINDOWS				
Aluminum Windows / Curtainwall w/ Glass	12,082	SF	60.00	$724,920
Man Doors w/ Hardware	275	LEAF	1,400	$385,000
			12.71	$1,109,920
FINISHES				
Floor Finishes	71,600	SF	6.00	$429,600
Wall Finishes	195,816	SF	1.50	$293,724
Ceiling Finishes	71,600	SF	3.50	$250,600
Finishes, Minimal Work (Existing Area)	15,700	SF	4.00	$62,800
Patch & Repair	1	LS	100,000	$100,000
			13.02	$1,136,724

CONSTRUCTION COST ESTIMATE

R E M O D E L   D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
ARCHITECTURAL - Continued				
SPECIALTIES				
Cabinets & Casework	602	LF	285.00	$171,570
Bath Accessories	15	EA	3,750	$56,250
Misc Specialties	71,600	SF	2.00	$143,200
			4.25	$371,020
EQUIPMENT				
Headwall Units	34	EA	1,750	$59,500
Misc Equipment, Minimal	1	LS	25,000	$25,000
			0.97	$84,500
CONVEYING SYSTEM				
Elevators	12	STOP	22,000	$264,000
			3.02	$264,000

CONSTRUCTION COST ESTIMATE

R E M O D E L   D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
STRUCTURAL				
DEMOLITION				
Remove Slab on Grade / Suspended Floor Systems	4,000	SF	20.00	$80,000
Remove Interior Masonry Walls	3,300	SF	10.00	$33,000
Remove Stairs w/ Railings	8	FLT	10,000	$80,000
			2.21	$193,000
FOUNDATION				
Helical Piers (Seismic)	6	EA	3,250	$19,500
Concrete Footings / Grade Beams (Seismic)	180	LF	700.00	$126,000
			1.67	$145,500
FLOORS				
Concrete Topping Slab At Parking	9,880	SF	4.50	$44,460
Metal Deck w/ Slab Infill At Stairs	1,296	SF	33.00	$42,768
New Main Stair w/ Railings	4	FLT	35,000	$140,000
Steel Pan Stairs w/ Railings	4	FLT	22,000	$88,000
			3.61	$315,228
COLUMNS				
Braced Frames (Seismic)	68	TON	4,500	$306,000
			3.51	$306,000

CONSTRUCTION COST ESTIMATE

R E M O D E L D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
STRUCTURAL - Continued				
ROOF				
Existing Roof				No Work Required
INTERIOR WALLS				
Concrete Shear Walls (Seismic)	9,800	SF	30.00	$294,000
			3.37	**$294,000**

CONSTRUCTION COST ESTIMATE

R E M O D E L   D E T A I L

SECTION	QUANTITY	UNIT	UNIT COST	COST
MECHANICAL				
DEMOLITION				
Remove Mechanical System	71,600	SF	2.50	$179,000
			2.05	**$179,000**
FIRE PROTECTION				
Fire Sprinkler System	71,600	SF	3.50	$250,600
			2.87	**$250,600**
PLUMBING				
Plumbing Fixtures w/ Piping	106	EA	3,700	$392,200
Plumbing Equipment & Specialties	71,600	SF	2.00	$143,200
Medical Systems (Compressed Air & Suction)	1	LS	75,000	$75,000
			6.99	**$610,400**
HVAC				
Ductwork & Insulation	61,250	LB	8.00	$490,000
Grilles, Registers & Diffusers	720	EA	140.00	$100,800
HVAC VAV Boxes	102	EA	1,800	$183,600
HVAC Equipment	71,600	SF	12.00	$859,200
HVAC Piping & Specialties	71,600	SF	4.50	$322,200
HVAC Control System	71,600	SF	4.00	$286,400
Test, Balance & Commissioning	71,600	SF	2.50	$179,000
Mechanical Work, Minimal (Existing Area)	15,700	SF	3.00	$47,100
			28.27	**$2,468,300**

CONSTRUCTION COST ESTIMATE

R E M O D E L   D E T A I L

SECTION		QUANTITY	UNIT	UNIT COST	COST
ELECTRICAL					
ELECTRICAL					
Electrical Demolition		71,600	SF	2.00	$143,200
Light Fixtures		1,110	EA	240.00	$266,400
Devices (Outlets & Switches)		1,480	EA	85.00	$125,800
Gear (Panels & Transformers)		71,600	SF	3.00	$214,800
Emergency Generator		1	EA	90,000	$90,000
Feeder & Branch Circuitry		71,600	SF	7.50	$537,000
Fire Alarm System		71,600	SF	1.50	$107,400
Phone / Data System		71,600	SF	3.00	$214,800
Security System		71,600	SF	2.50	$179,000
Electrical Specialties		71,600	SF	1.00	$71,600
Electrical Commissioning		71,600	SF	0.50	$35,800
Electrical Work, Minimal (Existing Area)		15,700	SF	2.50	$39,250
				23.20	$2,025,050
SUB TOTAL		87,300	GSF	129.40	$11,297,054
GENERAL CONDITIONS	10.0%				$1,129,705
BONDING	1.0%				$112,971
OVERHEAD & PROFIT	7.0%				$790,794
SUB TOTAL		87,300	GSF	152.70	$13,330,524
DESIGN CONTINGENCY	10.0%				$1,129,705
INFLATION TO BID DATE (June 2009)	10.0%				$1,129,705
TOTAL (Construction)		87,300	GSF	178.58	$15,589,935

NOTES: Costs are for Construction only.

CONSTRUCTION COST ESTIMATE

SITE SUMMARY

SECTION		AREA	UNIT	COST/SF	COST
SITE					$273,000
SUB TOTAL					$273,000
GENERAL CONDITIONS	10.0%				$27,300
BONDING	1.0%				$2,730
OVERHEAD & PROFIT	7.0%				$19,110
SUB TOTAL					$322,140
DESIGN CONTINGENCY	10.0%				$27,300
INFLATION TO BID DATE (June 2009)	10.0%				$27,300
TOTAL (Construction)					$376,740

NOTES: Costs are for Construction only.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of June 2009.

CONSTRUCTION COST ESTIMATE

S I T E   D E T A I L

SECTION		QUANTITY	UNIT	UNIT COST	COST
SITE					
ON-SITE					
Sanitary Sewer Line - 6"		300	LF	125.00	$37,500
High Temperature Water Line - 3"		150	LF	200.00	$30,000
Electrical Ductbank		300	LF	235.00	$70,500
Transformer - 500 KVA		2	EA	20,000	$40,000
4 Way Switch - 15 KV		1	EA	45,000	$45,000
Misc Site Work		1	LS	50,000	$50,000
					$273,000
SUB TOTAL					$273,000
GENERAL CONDITIONS	10.0%				$27,300
BONDING	1.0%				$2,730
OVERHEAD & PROFIT	7.0%				$19,110
SUB TOTAL					$322,140
DESIGN CONTINGENCY	10.0%				$27,300
INFLATION TO BID DATE (June 2009)	10.0%				$27,300
TOTAL (Construction)					$376,740

NOTES: Costs are for Construction only.
Costs are Based on a Competitive Bid Basis.
Costs are Based on a Construction Start of June 2009.

Summary of Value Engineering Options

During the Programming Phase, a Value Engineering Session was held to review and discuss possible cost saving options for the project as it moves into design. The following items were identified to be further studied and considered during the design phases.

Architectural

Item #1: $450,000
Do not replace the existing exterior windows.

Item #2: Requires Further Study
Look at minimal pieces and parts replacement to elevators versus full replacement.

Item #3: Requires Further Study
The Project should investigate a possible FEMA Grant as another funding source.

Item #4: $175,000
Add sun shading device on exterior of building at west windows.

Item #5: Up to $65,000
Have the abatement contractor provide all demolition work. This will increase the soft costs, and decrease the hard costs, but there will also be some potential cost savings.

Structural

Item #1: Requires Further Study
Consider using steel plate shear walls as the new lateral force resisting elements on the east and west exterior walls of the structure. It may be possible to place steel plate shear walls in only one of the bays at these two walls rather than two bays. The effect on redundancy on the lateral force resisting system shall be considered along with overturning forces on the existing concrete foundation walls. Window openings in steel plate shear walls will need to be considered.

Item #2: Requires Further Study
Evaluate the ability of the existing concrete foundation walls to spread overturning loads over a wider base below the new lateral force resisting elements and reduce the degree of foundation strengthening that will be required at the foundation walls.

Item #3: Requires Further Study
Evaluate options for placement of shear walls or braced frames at the stairway on the north wall of the building. If the location of the stair is moved slightly south, a braced frame may be able to be placed between the existing steel columns rather than placing a new concrete shear wall. This will make the new lateral system at the north wall consistent with the east and west walls.

Item #4: Requires Further Study
Consider use of composite materials to strengthen existing concrete shear walls at the stair/elevator core if strengthening is required by further analysis of the existing walls.

Mechanical

Item #1: $135,000
In the recently renovated areas of the building, including the 5th floor west side and the 2nd floor classrooms, the existing cold duct from the dual duct system could be re-used as the new primary

duct for the VAV reheat system. This option is very desirable.

Item #2: $150,000
Instead of 2 entirely separate air handling units, a single air handling unit with modular components (such as Huntair fan wall). This could reduce the equipment cost by using only 1 unit, but its modular components may also reduce the installation cost since the location of the air handling room will require assembling the unit in place. This is a fair option that should be further investigated during design.

Item #3: $85,000
Eliminate the use of radiant fin tube, and use only the reheat in the VAV boxes for heating needs. We recommend doing something additional on the 5th floor specifically due to the overhang, such as possibly supplying heat from boxes in the fourth floor, or possibly adding floor return to the fourth floor in order to get better mixing at floor level. These are fair options that should be further considered during design.

Item #4: $15,000
Use the air handler room as a return plenum, as opposed to ducting from the return shaft. This is a fair option that should be further evaluated during design.

Item #5: $20,000
Eliminate the steam powered domestic water heater. Domestic water could be heated by a central electric storage water heater. It could also be heated by electric instantaneous heaters under the lavatories, and an electric storage water heater for the changing and shower rooms. Although this option may save money, it is not desired by the University plumbing shop and maintenance department, so it is not a very desirable option.

Item #6: Up to $25,000
Investigate options for plastic piping. Because it is a return air plenum, these options may be limited; however, pvc sewer piping in plumbing chases may be an option to save some money.

Item #7: Up to $100,000
Re-use as much of the existing fire sprinkler piping as possible. Definitely re-use riser, fire department connection, etc. Possibly re-use mains. Coordinate options during design.

Electrical

Item #1: $15,000
Remove Elevator from Emergency Power: There is an exception in the IBC that possibly would not require the elevator to be on the emergency power system. This could reduce the size of the new generator. Prior to implementing this item, this should be reviewed with the code official, campus facilities and the users to verify if this is a viable VE option.

Item #2: Requires Further Study
Move Audio/Visual Budget from FF&E to Construction Budget: The design team could then work closely with the users during the design phase to control costs of this item. Also, if the AV system is designed and competitively bid, it can reduce costs.

Item #3: Requires Further Study
Define what the AV budget includes: There is a $355,682 line item in FF&E for AV equipment. This figure should be further broken down into various

rooms and systems to verify the overall budget figure and allow budget decisions to be made.

Item #4: Requires Further Study
Eliminate distance learning from the AV budget and add this in the future.

Item #5: Requires Further Study
Do not upgrade the AV in the Auditorium at this time – defer to future.

Item #6: Not Applicable
Place telephone conduits in existing open trench (east side of Nursing Building) at this time to avoid future disruptions: This item was reviewed further by David Wesemann and Scott Jefferson and found to not provide a significant advantage, since the sidewalk will need to be excavated anyway for the installation of the power conduits that are further to the south of the existing trench.

Item #7: These Items are included in the April 29, 2008 Estimate.
Verify that new 15 kV switch and transformers are in the budget. The budget did not appear to include these items. At least $80,000 should be put in the budget for this equipment.

Item #8: Requires Further Study
Verify that budget includes conduit only for voice/data cabling. There is a line item in FF&E for voice and data cabling and equipment. The construction budget should therefore not be carrying dollars for the wiring, but for conduit only.

Item #9: $25,000
Keep existing lighting in Auditorium: this would save the cost of a new ceiling and lighting system for this room.

The following items are being considered for cost savings, and will adjust the total construction cost as follows:

Architectural Item #1:	$ 450,000
Mechanical Item #1:	$ 135,000
Mechanical Item #2:	$ 150,000
Mechanical Item #6:	$ 25,000
Possible Cost Savings:	$ 760,000
Construction Estimate:	$15,996,675
Less possible VE Items:	$ -760,000
	$15,236,675

Cost Comparables

As part of the programming effort, the Programming Team researched similar renovation projects that have started or completed construction in the past 2 years. Cost comparability information for two of these projects is included below:

Old Main, Southern Utah University, Cedar City, UT

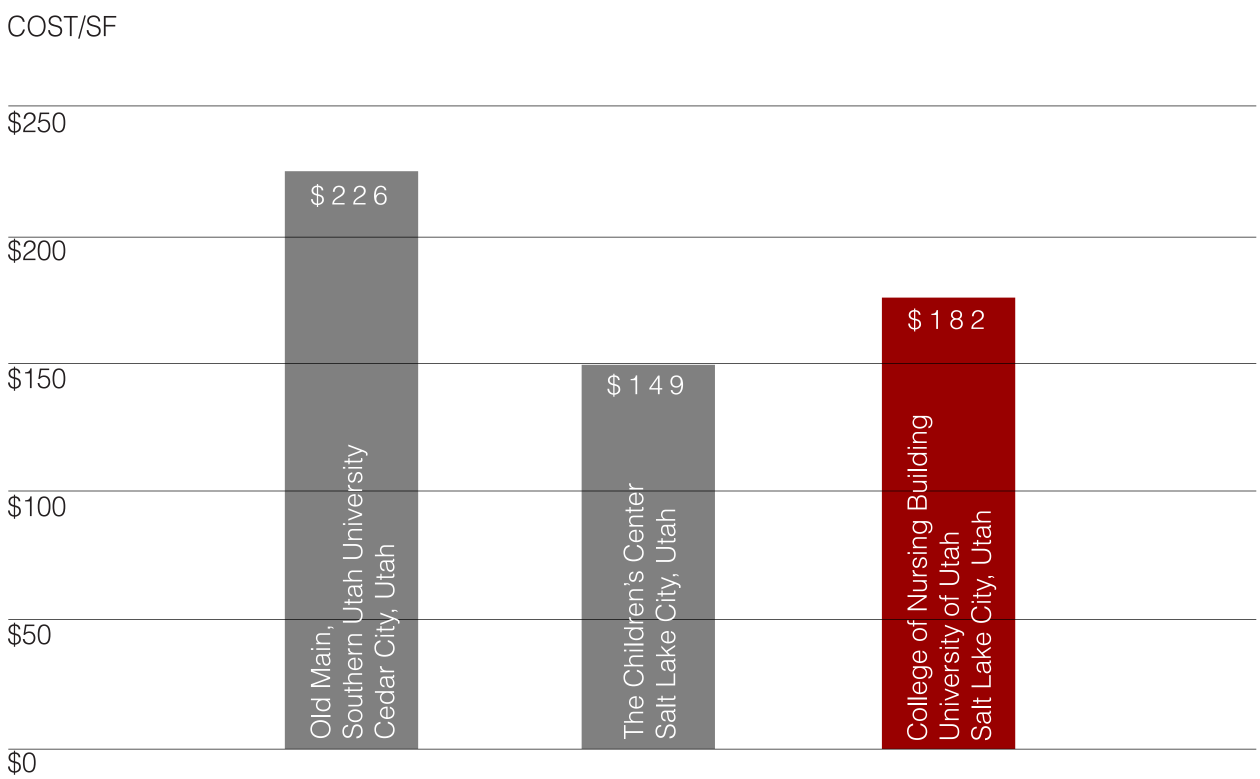
Year Started/Complete:	3-2007 / 3-2008
Building Gross Square-Feet:	18,000 GSF
Building height in levels:	3 levels
Total Construction Cost*:	$3,876,408
Cost per Square-Foot*:	$205
Cost/SF escalated to 6/2009*:	$226

The Children's Center, Salt Lake City, UT

Year Started/Complete :	3-2008 / 3-2009
Building Gross Square-Feet:	46,750 GSF
Building height in levels:	4 levels
Total Construction Cost*:	$6,300,000
Cost per Square-Foot*:	$135
Cost/SF escalated to 6/2009*:	$149

*Cost includes sitework, but not furniture or equipment.

Cost Comparison Graph



Appendices 07

Appendices

Appendix A

Site Visits Summary

In order to insure that the College of Nursing Simulation Learning Center is a state-of-the-art facility, the Programming Team visited several local simulation labs for a first-hand experience of "what to do and what not to do." The facilities visited include:

- J. Marriott Allied Health Sciences Building, Weber State University
- Health Sciences Center, Salt Lake Community College
- Dolores Dore Eccles Health, Wellness, & Athletic Center, Westminister College

While none of the facilities are identical to the Simulation Learning Center planned for the College of Nursing, components of each lab are relevent for study and provide useful comparison.

Weber State University

The Nursing Arts Lab in the J. Marriott Allied Health Sciences Building is utilized by over 20 faculty and nearly 300 students. Though the simulation lab at Weber State is much smaller in actuall size than than is planned for the University of Utah's College of Nursing Building program, it serves as a model for the implementation of high-tech equipment required for a state-of-the-art simulation facility.

The high-fidelity simulation room is a single rectangular room containing 3 beds (SimMan and neonatal intensive care unit) and a debriefing classroom setup. Each of the simulators have pan/zoom cameras and microphones located in the ceiling which are controlled by computer stations within the adjacent control room. In addition to the mannequins, hospital headwalls and equipment complete the simulation. A lower-fidelity suite with 11 beds, sinks, etc is located next door. An office, and a storage / break / work room are also included in the lab. The lab manager noted that it would be preferable to have individual rooms for each simulator so as to facilitate real-life hospital situations. Also, it was noted that storage was not adequate, and specifically, mannequin storage damaged the units over time.

Overall, the Weber State lab is technology oriented and does not emphasize the simulation of a hospital setting.

Salt Lake Community College

The simulation lab in the Health Sciences Center on the Jordan Campus of the Salt Lake Community College is moderately sized, yet serves over 450 students each year. Recently completed, the lab is a very realistic simulation of a hospital setting. Large simulator rooms and a central nursing station are the highlights of this facility. The four high-fidelity suites provide more that enough space for educating groups. Yet, the rooms do not have a central control room, and necessitate that the instructor run the simulation from inside the individual suite. Each of the suites has a oversized glass door for viewing from the halls. Additionally, a small observation area is provided, but the windows are located too high to allow useful visual access into the rooms. A large open plan room and several small rooms provided. provides opportunities for lower-fidelity individual and group education. A debrifing room is centrally located between the hi-fi and lo-fi rooms.

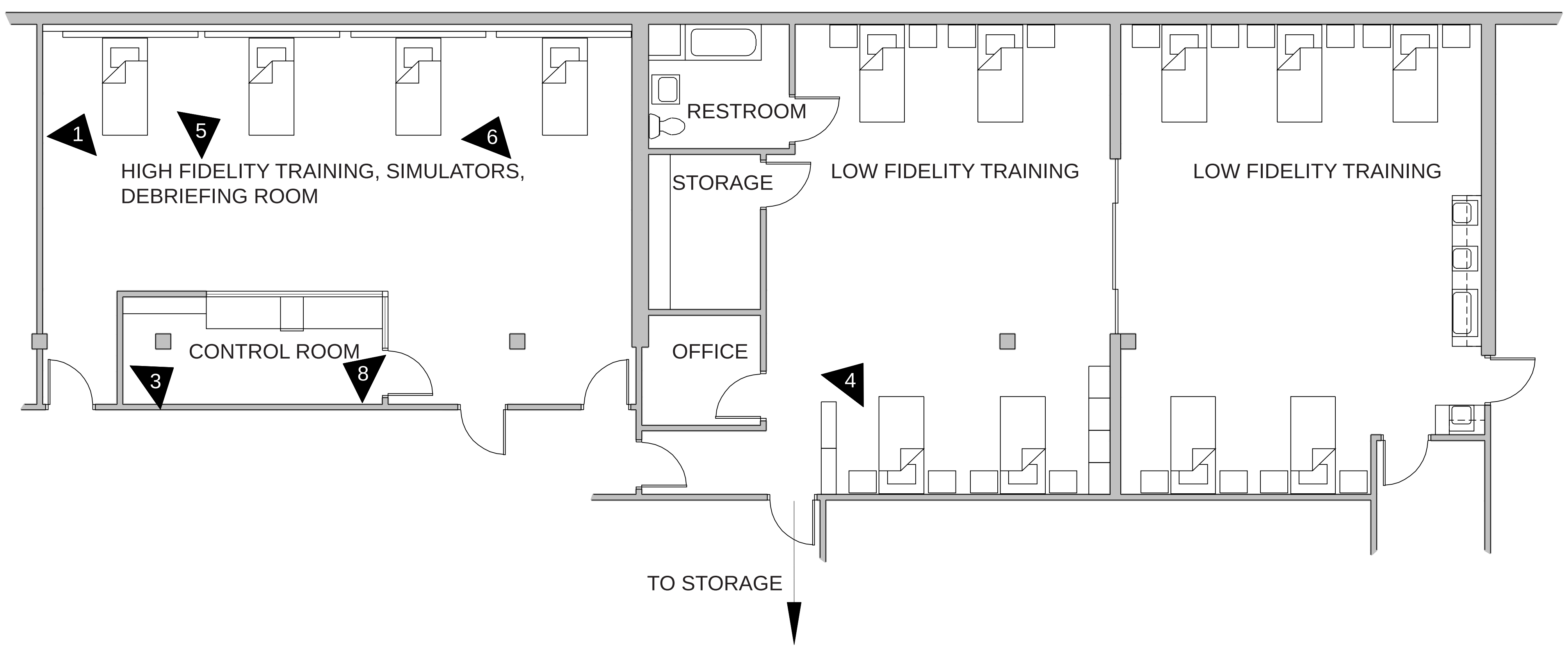
While the SLCC lab is a model for hospital simulation, it was noted that the lack of a centralized control room limits the high-tech lab approach to education.

Westminister College

The simulation lab in the Dolores Dore Eccles Health, Wellness & Athletic Center at Westminister College is moderatley sized, yet limits the number of students utilizing the lab to 90 per year. This lab provides four high-fidelity simulation rooms and a medium sized open plan room for lower-fidelity training. A couple of exam rooms and a large debriefing room balance the program. Two central control rooms provide visual access to the simlators, but were undersized. This lab utilitized a semi-morgue style approach to storing mannequins, which was deemed to be moderatly successful.

Overall, it was noted that this lab was a good balance between high-tech lab and hospital simulation. Tangential amenities, such as a swimming pool, running track, and exercise equipment, in the same facility exemplified the human-oriented center and provided many opportunities for informal interaction.

The photos and plans on the following pages serve to illustrate all of the simulation lab facilities visited during programming.

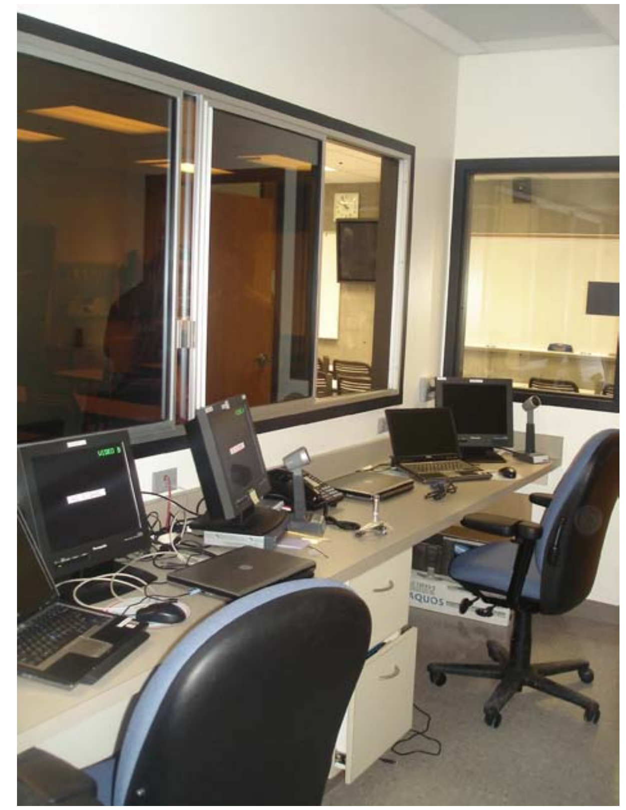


FLOOR PLAN

WEBER STATE UNIVERSITY
MARRIOTT HEALTH BUILDING

HEADWALL CLOSE-UP
1

DEBRIEFING AREA
2



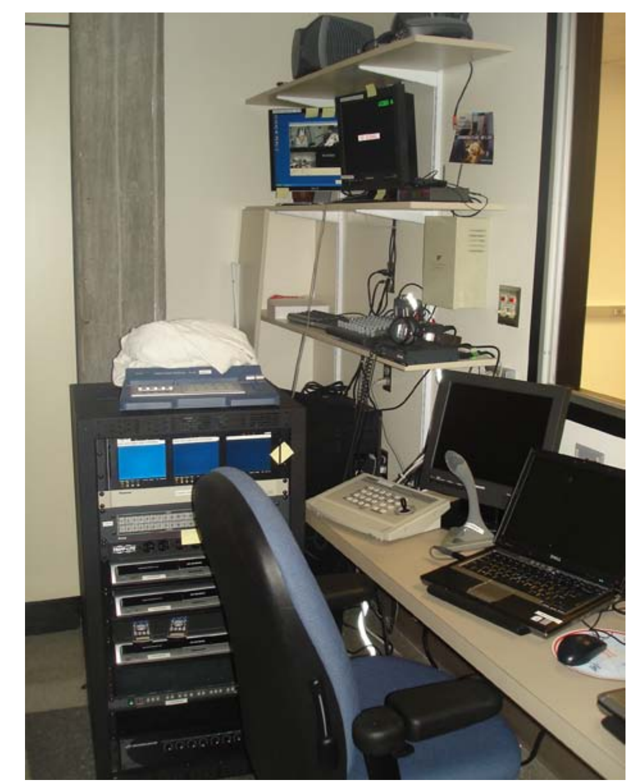
CONTROL ROOM
3

LOW FIDELITY TRAINING AREA
4

HIGH FIDELITY SIMULATION AREA
5

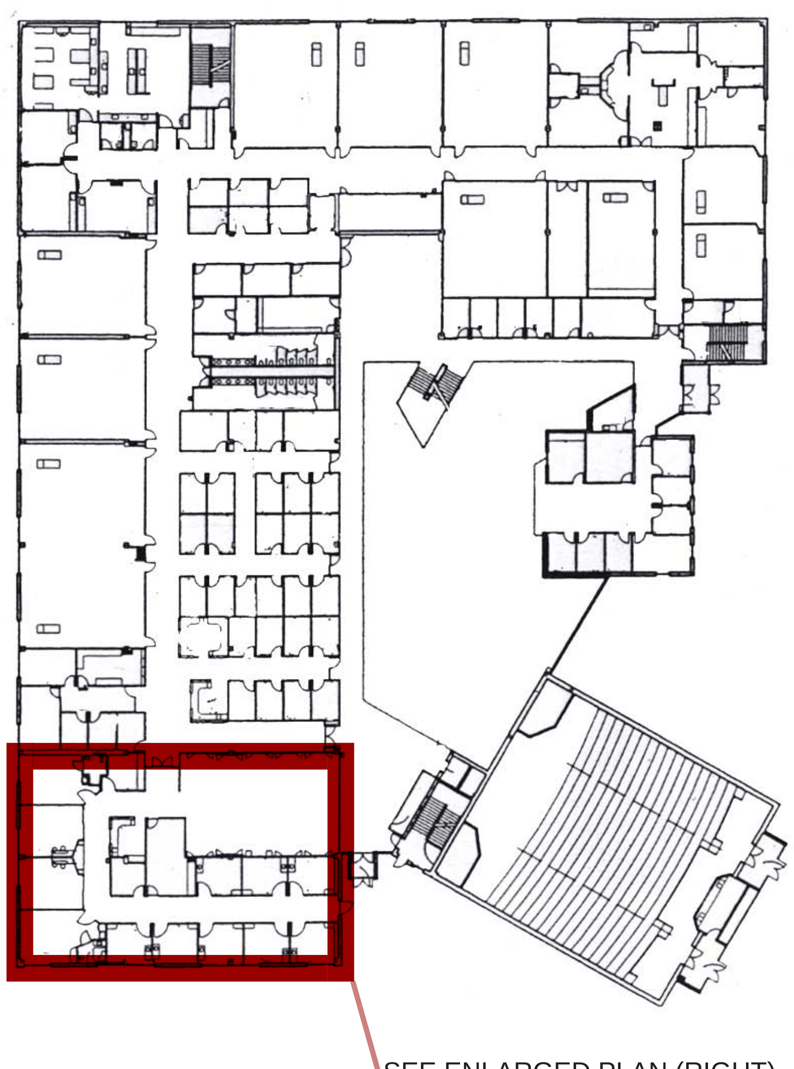
HIGH FIDELITY SIMULATION AREA
6

STORAGE, BREAK ROOM, COPY/FAX ROOM
7

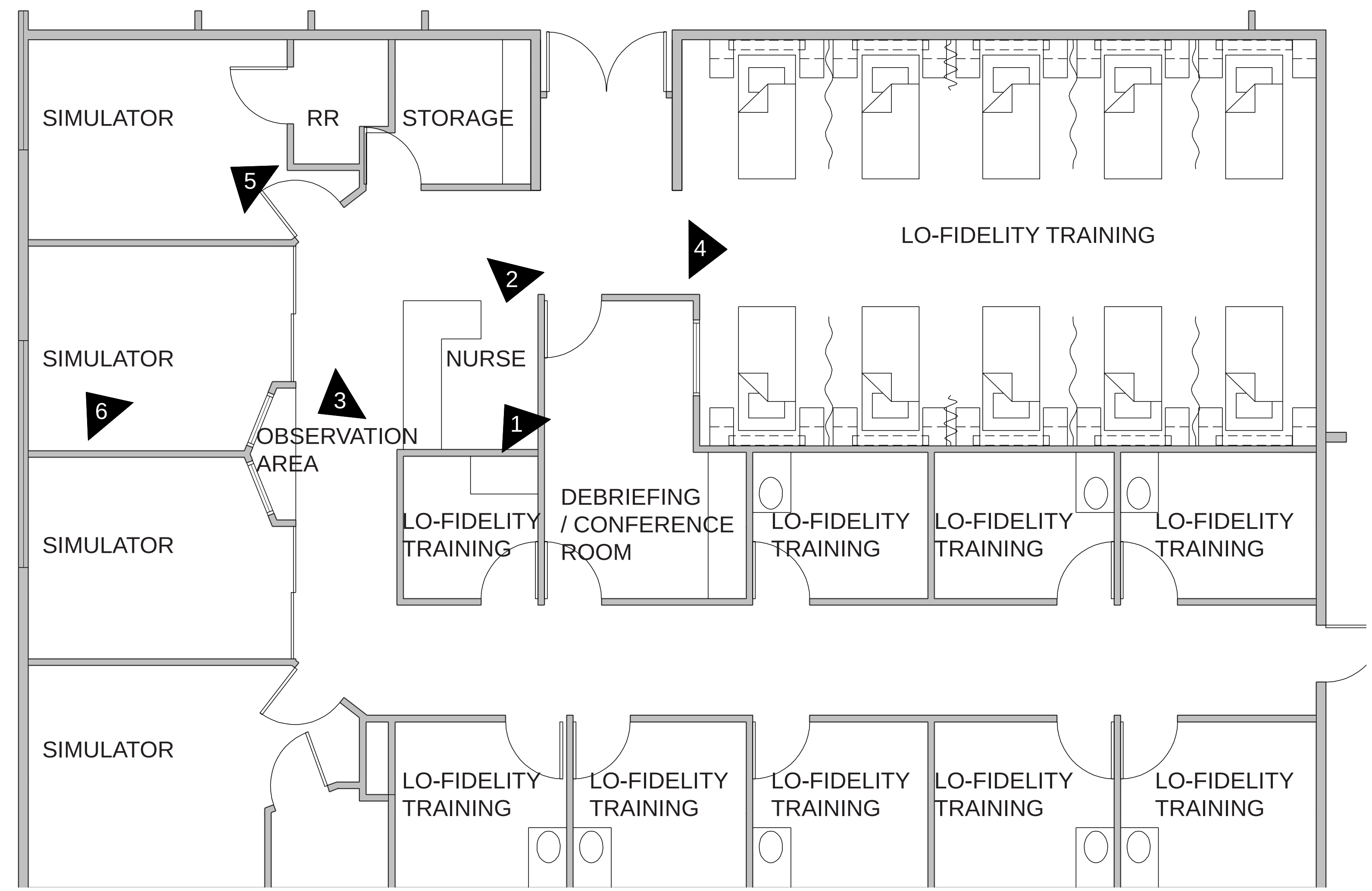


CONTROL ROOM
8

VIEWS



FLOOR PLAN

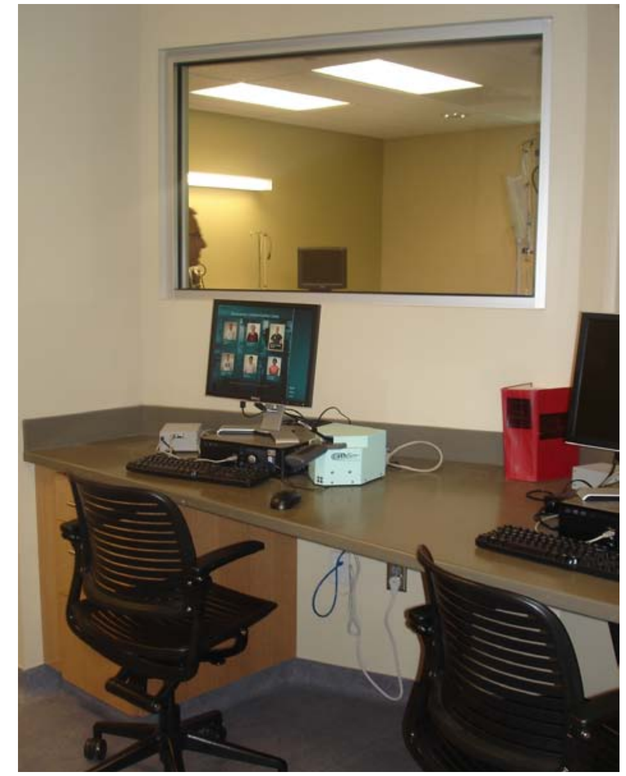


ENLARGED PLAN

SALT LAKE COMMUNITY COLLEGE (JORDAN CAMPUS)
HEALTH SCIENCES CENTER
MAIN LEVEL


VIEW FROM NURSES STATION
1


NURSES STATION
2

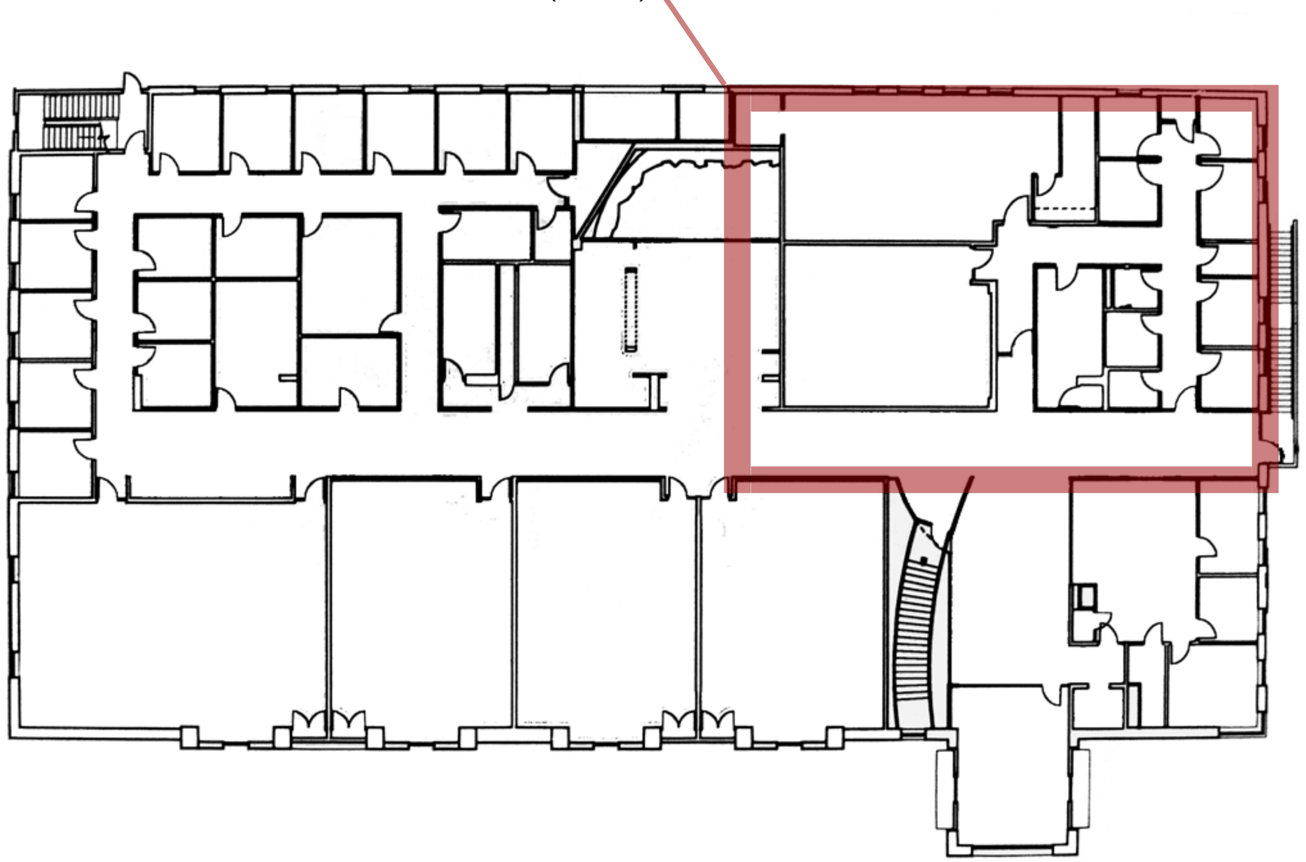

OBSERVATION AREA
3


LOW FIDELITY TRAINING ROOM
4

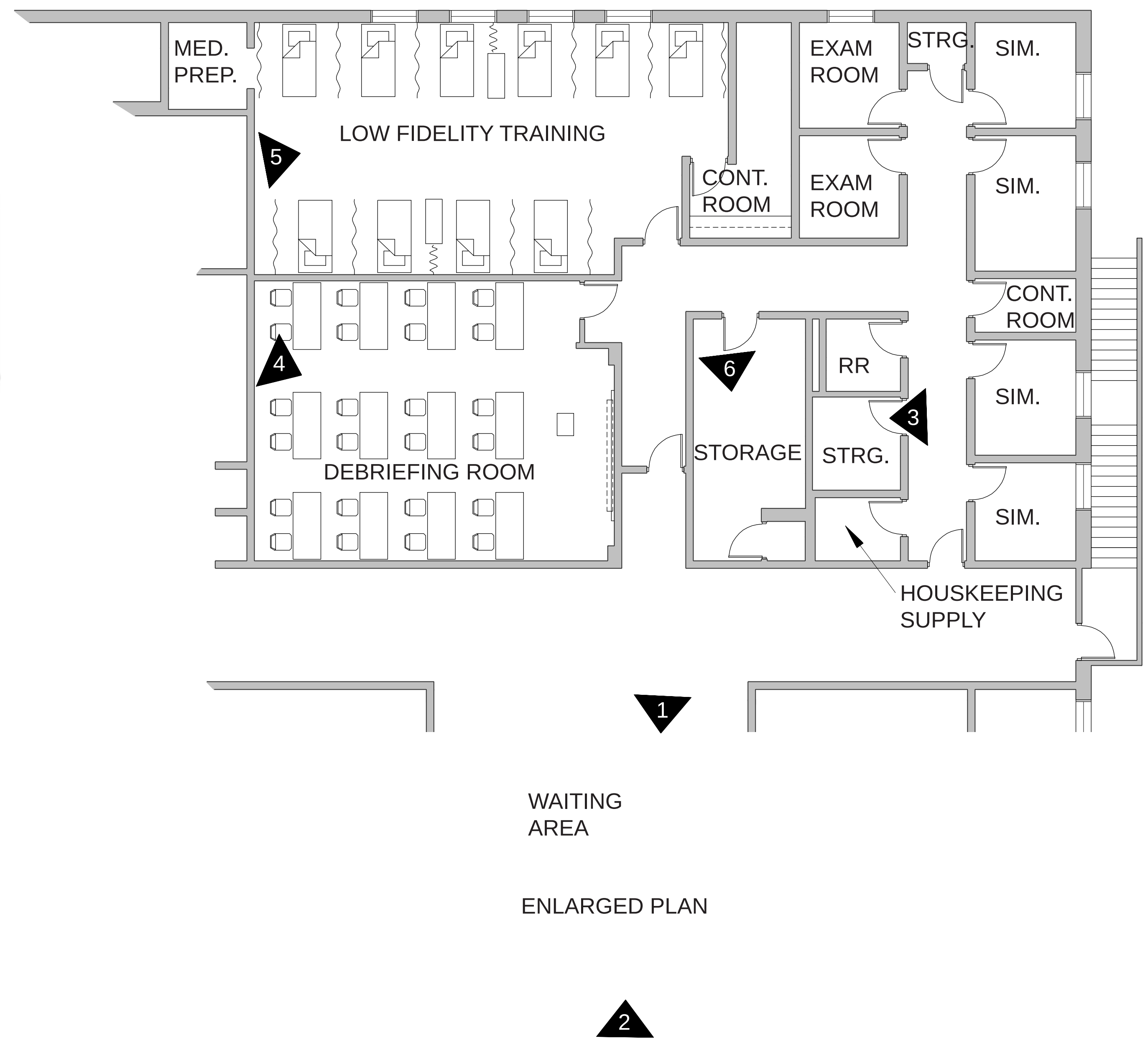

SIMULATION ROOM
5


HEADWALL DETAIL
6

VIEWS



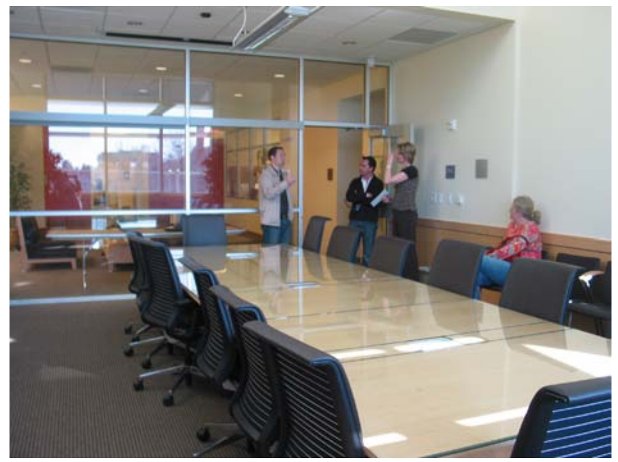
FLOOR PLAN



ENLARGED PLAN

WESTMINSTER COLLEGE
DOLORES DORE ECCLES HEALTH, WELLNESS, & ATHLETIC CENTER
TOP LEVEL


WAITING AREA
1


BOARD ROOM
2


STORAGE
3


DEBRIEFING ROOM
4


LOW FIDELITY TRAINING
5


SIMULATOR STORAGE
6

VIEWS

Appendix B

University of Utah
College of Nursing
Seismic Evaluation Report

Prepared for:
Ajc Architects
703 east 1700 south
Salt lake city, utah 84105

REAVELEY ENGINEERS
& ASSOCIATES, INC.

INTRODUCTION

In recent years the awareness of the potential of earthquakes in Northern Utah has been heightened. Recent discoveries along with geotechnical and geoseismic investigations have revealed that major earthquakes occur in Northern Utah on a regular geologic basis. Since many of the buildings found in Northern Utah were built at a time when knowledge of the region's seismicity and the knowledge of proper seismic detailing were limited, these buildings are particularly vulnerable in terms of potential damage due to seismic motion. The buildings at the College of Nursing in University of Utah are no exception. Also, in recent decades, innovative changes have been incorporated into building codes to deal with seismic issues. Buildings designed prior to these innovations simply do not have the inherent characteristics that enable them to perform as well during a significant earthquake. Many older buildings are vulnerable to seismic damage simply because they were designed and built without the benefit of modern standards and code criteria.

OBJECTIVES AND SCOPE

The evaluation of the College of Nursing building will be completed using a tiered approach specified in ASCE/SEI 31-03. The first tier, or screen phase, includes a review of construction documents, site observations, and the completion of a number of checklists and associated quick check calculations. The second tier of the evaluation is performed for structures that do not comply with the requirements of the tier 1 screening. Tier 2 evaluation includes a detailed analytical evaluation of the various structural members. Structures that fail to comply with the requirement of a tier 2 evaluation can be evaluated in yet a third tier of evaluation. The tier 3 evaluation employs very sophisticated and time intensive nonlinear analysis. The use of these nonlinear techniques can in some cases qualify structures that would not meet the requirements of a linear tier 2 analysis. The evaluation methodology is discussed more fully in the following section.

The objective of this report was to complete a seismic screening of the boiler plant per the methodology outline in ASCE/SEI 31-03. Based on these findings in tier1, a Tier 2 evaluation has been performed. The tier 2 evaluation required the completion of the following tasks:

- Site investigation to confirm the layout of structural elements that are part of the building's lateral force resisting system and to assess the physical condition of the building.
- In-depth study of existing building drawings to develop an accurate understanding of the construction of the building.
- Create a three-dimensional computer model(s) that will be used to accurately calculate distributed lateral forces on structural elements under design lateral loads.

- Perform calculations on structural elements to determine demand to capacity ratios to verify the adequacy of existing construction.
- Develop a schematic seismic upgrade plan to show the extent of seismic rehabilitation work required to strengthen the building.
- Develop an estimate of probable cost for structural seismic rehabilitation work.

BASIS OF EVALUATION

The seismic evaluation of the College of Nursing Building was performed per ASCE/SEI 31-03, "*Seismic Evaluation of Existing Buildings*", 2003. This standard is the nationally recognized standard for the seismic evaluation of existing buildings.

ASCE/SEI 31-03 was developed specifically for evaluating the capacity of existing buildings to withstand earthquake force levels established by the most recent criteria set by earthquake scientists. Applying the requirements of new building codes, such as IBC 2003, to existing buildings is generally not recommended because detailing requirements for ductile lateral force resisting systems in new construction cannot be incorporated in older buildings. ASCE/SEI 31-03 provides *m*-factors that are component demand modifiers that are based on the Performance Objective and the component or element. These *m*-factors establish the design capacity of the members.

The performance objective for this study has been established as Life Safety Performance Level at the Maximum Considered Earthquake (MCE). The MCE represents the characteristic large earthquake determined for the region.

Life Safety Performance is defined as the structural components maintain a margin of safety against failure and/or collapse, and the overall risk of life-threatening injury as a result of structural damage is expected to be low.

Seismic force levels used in ASCE/SEI 31-03 analyses are developed using mapped ground accelerations multiplied by modification factors to obtain a seismic coefficient. Seismic forces for this site were generated based on contour maps prepared by the USGS. Due to the proximity of the site to known faults the anticipated accelerations are high. The peak expected acceleration for buildings with short periods for the MCE is 1.77 g (1.77 times the weight of the structure).

The acceleration determined from these maps is the modified by multiplying by a series of coefficients outlined in ASCE/SEI 31-03. This seismic coefficient is multiplied by the participating weight of the building to calculate an equivalent static lateral load. Utilizing a mathematical model of the building, the equivalent static lateral load is distributed to structural elements that resist lateral forces to determine the demand on each element. Structural elements are classified as either primary or secondary, primary elements being those structural elements and components that provide the capacity of the structure to resist collapse under seismic forces induced by ground motion in any direction. These elements create the Seismic Force Resisting System (SFRS). All other elements are classified as secondary.

Expected strengths for building materials used in the construction of the building are determined through existing drawings and specifications. These expected strengths are multiplied by an *m*-factor to establish the design capacity of the structural element. The *m*-factors are demand modifiers that account for expected ductility associated with a specific action at the selected structural performance level. Demand to Capacity Ratios (DCR) are calculated for each element and compared to the acceptance criteria for the analysis method. If deficiencies remain, rehabilitation methods will need to be investigated.

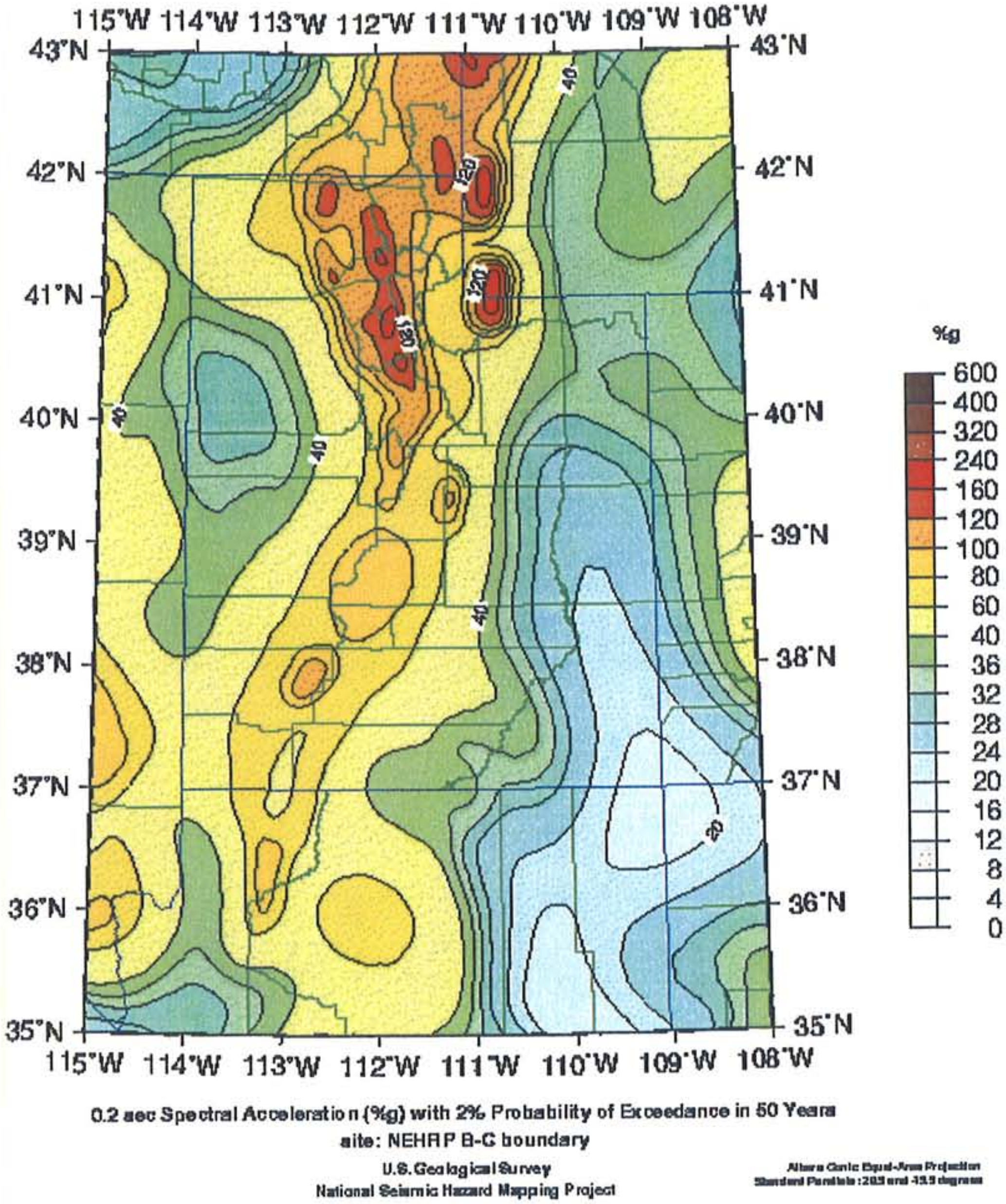
SITE SEISMICITY

The College of Nursing Building is located within the Wasatch fault zone. Geologic seismic hazard mapping indicates that this site could experience severe lateral ground shaking.

Due to its proximity to the Wasatch Fault, the expected ground accelerations are high. The expected ground motion for the College of Nursing Building and other sites near the fault are expected to be of similar magnitude of ground motions of many areas at or near fault-lines along the coast of California.

ASCE/SEI 31-03 defines a minimum level of lateral forces to use for the evaluation of structures based on ground motions corresponding to the MCE. It is based upon analysis of available geoseismic data and is meant to represent the large, rare seismic event that is characteristic for the site. USGS (United States Geological Survey), in cooperation with NEHRP (National Earthquake Hazards Reduction Program) have developed contour maps that display the level of lateral motion expected for any site across the United States. The information shown in the contour maps is then mathematically combined with coefficients representing localized soil conditions to produce the expected level of ground motion.

To enable engineers to determine the most appropriate level of force for the building in question, the contour maps are divided to represent two primarily unique building classifications. These are termed as buildings with short periods (periods in the range of 0.2 seconds) and buildings with long periods (periods in the range of 1.0 seconds or more). A building period is defined as the amount of time required for the structure to complete one complete cycle of natural vibration. For the buildings at the College of Nursing, the contour maps indicate that horizontal accelerations could be in excess of 1.77 g for short period structures (see Figure 2). For more limber long period structures horizontal accelerations could be in excess of 0.79 g. This means that a very stiff short structure could experience horizontal forces as high as 1.77 times its own weight and a taller, more limber structure could experience horizontal forces as high as 0.79 times its own weight for the characteristic earthquake.



USGS Spectral Acceleration Map (MCE)

Figure 1

BUILDING DESCRIPTION

The College of the Nursing Building was constructed in 1967. This building consists of a 4 story office and classroom building above the 2 levels of the parking structures. The upper level of the parking structure is at ground level. The parking structure has been repaired in 1988.

The office and classroom building is a steel framed structures supported on the concrete columns and walls at parking level. The columns consist of the wide flange sections that are spliced at the second and fourth floors. The suspended floor slab consists of 3" light weight concrete over the 1 ½" deep composite metal deck reinforced with #3 at 12" o.c. each way. The metal deck at floors bears on wide flange beams with composite construction.

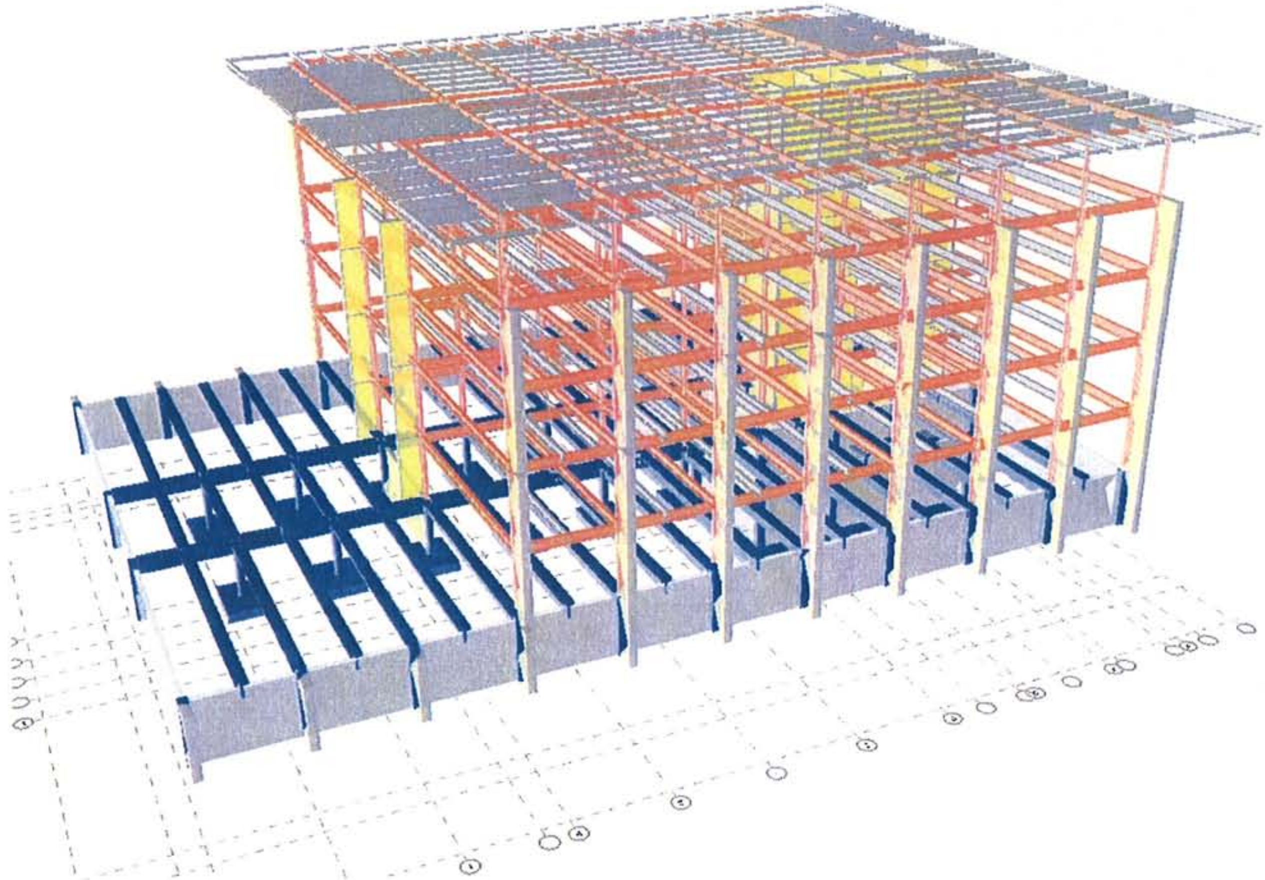
The roof structure is comprised of 2 ½" light weight concrete on 1 ½" deep, 22 Ga. Metal deck. The roof slab bear on the wide flange beams.

The parking floor consists of the 4 ½" reinforced concrete slab supported by post tensioned concrete beams. The post tensioned beams are supported by concrete columns and walls.

The seismic force resisting system consists of reinforced masonry shear piers at exterior and steel moment frames in orthogonal direction. Reinforced concrete shaft walls at stair and elevator will function as shear walls. Steel moment frames consists of steel wide flange columns and beams with bolted end plate connections. Concrete over metal deck at the floors and roof functions as a rigid horizontal diaphragm.

3D View of the Building

The existing building frame in 3D view is shown in Figure 2.



Building in 3D View

Figure 2

FINDINGS

For the tier 1 analysis, ASCE/SEI 31-03 requires investigation into the primary seismic systems of the structure as well as investigation into building characteristics that are commonly considered to be critical in terms of a building's seismic safety and ability to perform in a significant earthquake. The criteria used to evaluate the building was based on the Basic Safety Objective which requires that the building perform a Life Safety level of performance at the Maximum Considered Earthquake (MCE).

In order to conduct this investigation, ASCE/SEI 31-03 provides a structural checklist to evaluate building characteristics that have primary influence over a structure's ability to safely withstand the forces of a moderate or major earthquake. The findings of these checklists help to identify areas or components of the building that have potential seismic deficiencies. The areas or components identified in the checklist are then evaluated in a tier 2 evaluation to determine the extent of the deficiencies.

In the evaluation of the College of Nursing Building, checklists were conducted on each portions of the structure. Each item in the checklist was reviewed for compliance, or non-compliance based upon plan review, a limited site walk through, limited analysis, and engineering judgments. The full results of the checklists are included in the appendix.

A Tier 2 analysis of the Nursing building structures required computer models of the structures to be developed to analyze the forces in the elements. Computer models of each structure were created and analyzed individually. Each building section required a significant amount of computer analysis to determine the seismic behavior of the buildings. All computer modeling was done using RAM version 8.2.4. In the computer models, all beams and columns were modeled in the program using the parameters given in the original design drawings. Earthquake loads were applied to the computer model based on the specific ground motion expected at the location of the terminal building based upon the MCE.

As the earthquake forces were applied to each of the computer models, specific information regarding movement of the structure, forces in the beams and columns, and stresses in the connections was gathered. This information was then input into spreadsheets developed to evaluate critical elements for life safety and collapse prevention using the ASCE/SEI 31-03 Guidelines.

The computer model the building is shown in Figure 3. The building deflections under the MCE earthquake in both directions are shown in Figure 4 and 5.

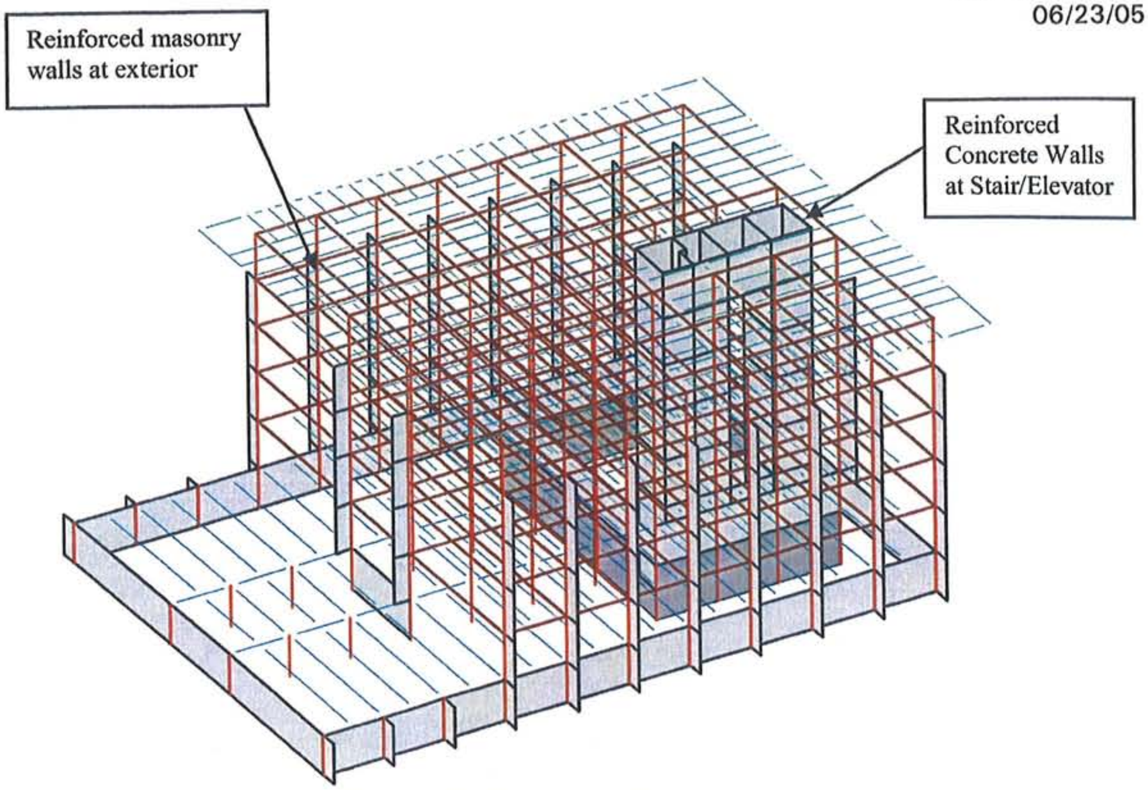


Figure 3 Building Frame System

Deficiencies

The following is a list of the major potential deficiencies identified by the ASCE/SEI 31-03 checklists. The deficiencies are listed in their relative order of importance based upon life-safety considerations, with the lower numbered deficiencies having greater importance. It should be noted that ASCE/SEI 31-03 does not prescribe a relative importance to the checklist elements and therefore, the order of listing is based upon engineering judgments and may not be exact.

1) **Masonry Shear Walls.** The shear stress in the reinforced masonry shear walls/piers is 133 psi, calculated using ASCE/SEI 31-03 quick check procedure, which is greater than 70 psi for Life Safety.
2) **Drift.** The drift ratio of the steel moment frames with reinforced masonry infill, calculated using ASCE/SEI 31-03 quick check procedure is from 0.098 to 0.15, which is greater than 0.025 for Life Safety.
   The Tier 2 analysis of the existing lateral resisting system indicates that there are large interstory drifts in the East-West direction due to the seismic loads. The story drift is 6.9" that is greater than the allowable story drift of 4.2" Large story drift have potential to cause extensive structural and nonstructural damage to moment connection, partitions, and claddings. Drifts may also induce large P-Delta demands. The building deflections under the MCE earthquake in both directions are shown in Figure 4 and 5.

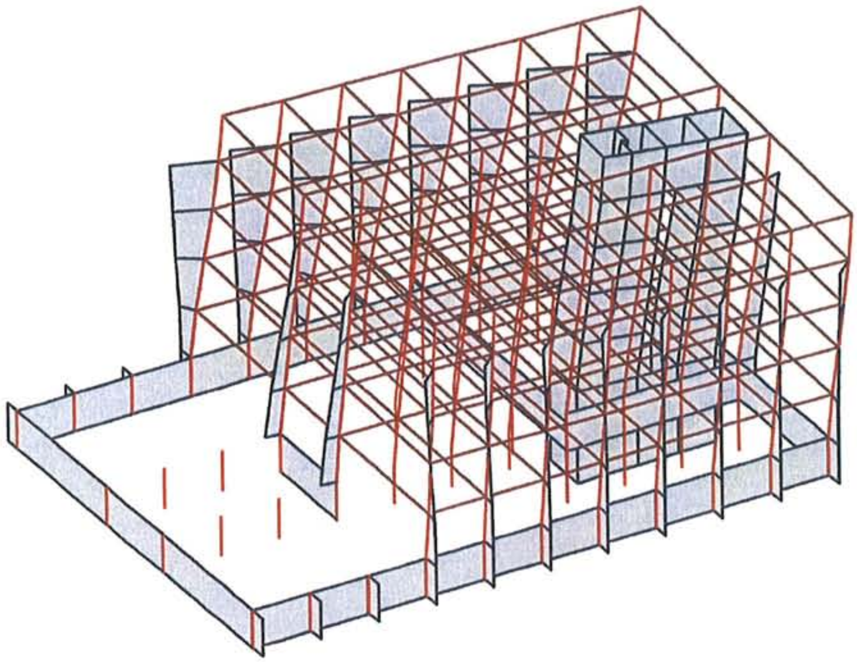


Figure 4, Building Deflection under the MCE in North-South Direction

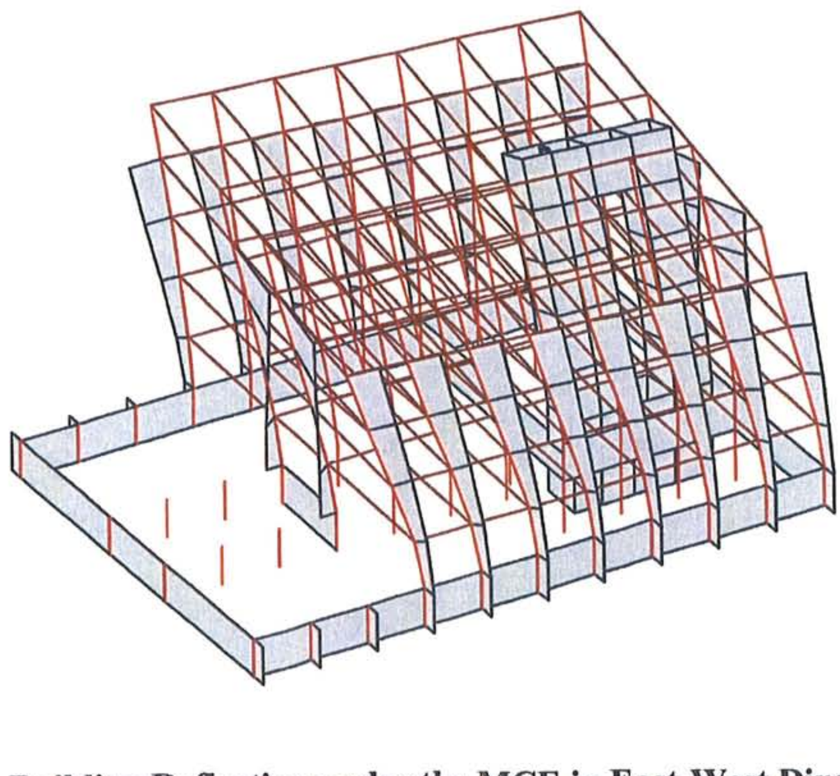


Figure 5. Building Deflection under the MCE in East-West Direction

3) **Moment Frame Connections.** . The moment frame connections that were used in the original structure include bolted end plate connection but are not detailed to current standards for moment frames required to resist large seismic forces. The 1994 earthquake in Northridge, California indicated that moment frame connections of this type are susceptible to severe damage or collapse in an earthquake. Thus these types of connections are called pre-Northridge Connections. These connections are susceptible because they tend to fail prematurely. Current moment frame connections are detailed to provide ductility in the beam to column connection. Ductility in the connection enables it to experience load reversals and high rotational demands and still maintain its structural integrity. A typical existing moment frame connection as detailed in the drawings is shown below in Figure 6.

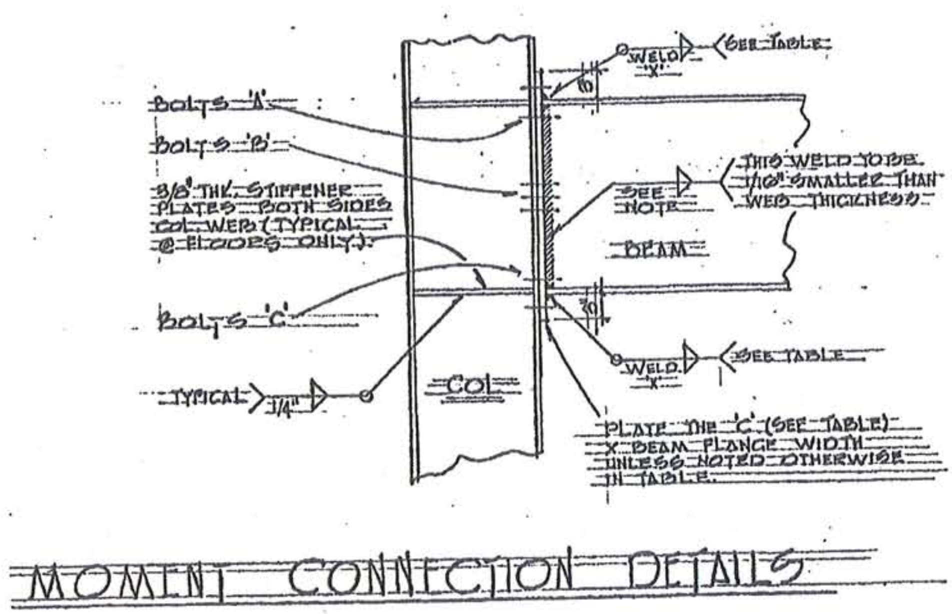


Figure 6 Existing Bolted End Plate Moment Connection

4) **Strong Column/Weak Beam.** The moment frame does not meet the strong column weak beam requirement. It is means that moment frame columns are not strong enough to force hinging in the beams. Column hinging can lead to story mechanism and a concentration of inelastic activity at a single level.
5) **Concrete shear wall.** The shear stresses in the concrete shear walls at stair and elevator shaft is from 150 psi to 400 psi, calculated using ASCE/SEI 31-03 quick check procedure, which is greater than 100 psi for Life Safety.
6) **Torsion.** After the failure of the masonry shear walls at exterior under the large seismic forces, their will be a significant torsion in the building per ASCE/SEI 31-03 quick check. Additional seismic demands and lateral drifts will be imposed on the vertical elements by rotation of the diaphragm.

7) **Non-Structural Elements.** Non-structural elements in the building that are not properly anchored can result in falling hazards to the building occupants. These elements include ceilings, lights, elevators, signs, partition walls, shelving and storage, fire sprinklers, piping, mechanical and electrical equipment, and hazardous materials. Due to the nature of the building, the amount of piping and heavy mechanical equipment is very large, and some of these pipes, such as water piping, pose potentially large hazards. During the site walk through it was noted that most of the piping and many of the other listed elements may not comply with ASCE/SEI 31-03 requirements. It is recommended that all of these elements be checked and properly anchored, braced, and outfitted with flexible couplings at building-to-building, tunnel interfaces, and other strategic locations.

Preferred Option and Upgrade Recommendations

Schematic retrofit approaches have been developed for each of deficiencies. Retrofit schemes have been developed based upon knowledge of existing deficiencies and engineering judgment.

There are several items that need to be upgraded to bring the College of Nursing Buildings into compliance with the requirements set forth by ASCE/SEI 31-03. The following are our recommendations for upgrading the structures:

1) **New Concrete Shear at the North of the Building.** Adding new concrete shear wall at the north will significantly reduce the shear in the existing masonry and concrete shear wall. It also eliminates the torsion problem in the building.
2) **New Steel Braced Frames at the East and West of the Building.** Adding a new concrete shear wall at the north of the building does improve the performance of the building to resist the large seismic loads. However, the moment frames in the south-north direction still resist the distributed seismic forces. The strong column and weak beam problem still exists. It is very expensive to strengthen the each column along the east and west side of the building. The new steel braced frames is preferred and recommended to add along the east and west side of the building. It will release almost all the stresses of the moment frame member due to the seismic force. .Figure 7 shows the new steel braced frames locations.
3) **Non Structural Elements.** All the connections and bracing for mechanical and electrical system will be expected to be designed to meet the current code requirements during the upgrade of mechanical system. The bracing for ceilings,

lights, and partition walls will be expected to be designed for current code during the interior remodel.

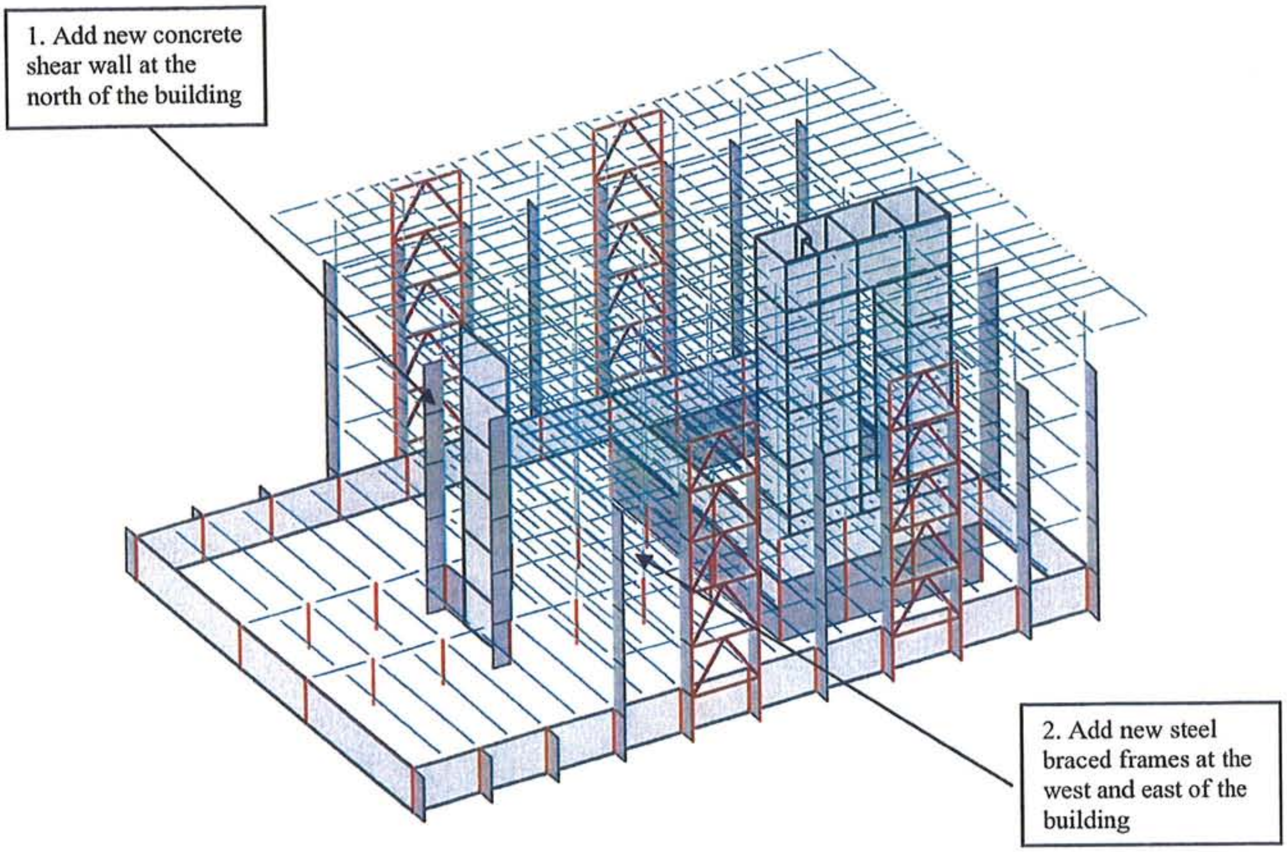


Figure 7 Seismic Upgrade based on Preferred Option

ESTIMATE oF PROBABLE COST

An estimate of probable costs has been developed for the schematic retrofit approach presented for the building. The cost estimates derived include costs for removing typical architectural finishes, strengthening the structure or foundation, and replacing the architectural finishes. Additional costs have been included to account for areas where the proposed retrofit appears to interfere with known plumbing, electrical, mechanical equipment or special architectural finishes. Costs have not included contractor mobilization, overhead and profit as well as providing some allowances to cover typical design fees, testing and special inspection requirements. The cost estimates shown are costs relative to upgrading the main structural system of the building to meet the basic safety objective of ASCE/SEI 31-03. Costs for bracing secondary elements of the building including architectural ornamentation, signs, mechanical equipment or other non-structural elements have not been included in the cost estimate. Costs have not included the new additions at the south and north entries, architectural interior remodel, and the infill of existing stair.

The following table presents a summary of the expected costs for the upgrade of the structures for the college of nursing building based on the phases.

Structure	**Upgrade Cost Estimate**
Phase I (Seismic upgrade from foundation to 2nd floor)	$590,294.00
Phase II (Seismic upgrade from 2nd floor and above)	$855,371.50
Total Seismic Upgrade Cost Estimate:	$1,445,666.00

Conclusion

The presented upgrade scheme presents an approximate solution in order upgrade the structure to meet the Life Safety Performance Level of ASCE/SEI 31-03. Additional analysis will be required in order to incorporate the upgrade into the architectural floor plan and provide proper sizing and detailing of the structural elements.

The seismic upgrade recommendations are intended to increase the level of life safety to the building occupants. However, many of the existing details of the building still will not meet current code requirements for a new building. This means the earthquake hazard to occupants of the building will be reduced, but not eliminated. The goal of this report is to present a schematic upgrade that will bring the primary structural system to meet the Life Safety Performance Level of ASCE/SEI 31-03. The owner should consider the intended use of the structure to determine if the Life Safety Performance Level meets the owner's upgrade criteria. A similar upgrade approach would be used with a higher seismic performance level (i.e. Immediate Occupancy), however, strengthening measures would be more severe and costs would increase accordingly. Under the Life Safety Performance Level criteria, injuries during the earthquake may occur, but it is expected that the overall risk of life threatening injury will be minimized. The Life Safety Performance Level upgrade criteria are not intended to limit damage to the building. Repair of the structure after a moderate seismic event should be possible, but for economic reasons this may not be practical.

Fan Xiao, P.E.

Jeff Miller, S.E.

Appendix A

Cost Estimate

Cost Estimate for College of Nursing at Univ. of Utah (PHASE I)

The costs listed below are for the work related to seismic upgrade only

	Typical Costs			
CF	Concrete Foundation Work (cu yd)	900	$	600.00
HP	Helical Piers (each)	2300	$	2,300.00
CS	12" concrete Shearwall (sq ft)	25	$	30.00
ST	Cost per lb of steel (installed)	2	$	2.50
FW	5/16" fillet weld (per inch)	1.5	$	1.50
D	Arch, Mecha and Elec Demolition	5	$	8.00
A	Arch, Mech and Elec Put Back (sq ft floor space)	30	$	20.00
W	Wall put back (lin ft)	150	$	150.00
DS	Drag Struts (lin ft)	200	$	200.00
BFC	Braced frame connections at floor (each)	750	$	750.00
EWD	Exterior Wall demolition	8	$	8.00
EWF	Exterior Wall put back	25	$	45.00
RDC	Roof Diaphragm Connectios (lin ft)	35	$	200.00

		Quantity	Units		Cost/unit		Cost
Building							
Braced Frames							
Anchor Bolts		48	bolts	$	150.00	$	7,200.00
New Braced Frame Steel	ST	17072	lbs steel	$	2.50	$	42,680.00
Welds for BF connection	FW	2688	inches	$	1.50	$	4,032.00
Gussets		2656	lbs steel	$	2.00	$	5,312.00
Diphragm Connection	RDC	228	lin ft	$	200.00	$	45,600.00
Footing and Foundation							
New Footing at BF(Augmentation)	CF	256	Cu Yds	$	600.00	$	153,600.00
		0	Cu Yds	$	-	$	-
InFill Floor at Braced Frames		740	sq ft	$	230.00	$	170,200.00
	ST	0	lbs steel	$	2.50	$	-
Concrete Shear Wall							
Wall Concrete	CS	350	sq ft	$	30.00	$	10,500.00
New Footing at CW(Augmentation)	CF	10.4	Cu Yds	$	600.00	$	6,240.00
New SOB	CF	3.7	Cu Yds	$	600.00	$	2,220.00
Diphragm Connection	RDC	30	lin ft	$	200.00	$	6,000.00
Demolition and Replace							
Demo Existing SOG		300	sq ft	$	2.00	$	600.00
Demo existing Masonry Wall	EWD	1190	sq ft	$	8.00	$	9,520.00
Demo Existing arch ceiling	D	1780	sq ft	$	8.00	$	14,240.00
		0	lin ft	$	-	$	-
Replace Slab on Grade		300	sq ft	$	4.00	$	1,200.00
Replace Existing Ext Wall	EWF	1190	sq ft	$	45.00	$	53,550.00

Replace Ceiling	A	1780	sq ft	$	20.00	$	35,600.00
		0		$	-	$	-
Misc/Mech/Elec/Plumb		1	lump	$	12,000.00	$	12,000.00
Public Barricades and Protection	PB	1	allowance	$	10,000.00	$	10,000.00
						$	**590,294.00**
Total Area of the Building		120807	sq ft			**$**	**4.89**

Note:
The cost listed above are not included the items as follows; the new additions at the south and north entry, the architectural interior remodel, the infill of existing stair, mechanical and electrical work relating to the listed item above; mobilization, overhead, profit, design fee, and special inspection.

Cost Estimate for College of Nursing at Univ. of Utah (PHASE II)

The costs listed below are for the work related to seismic upgrade only

	Typical Costs			
CF	Concrete Foundation Work (cu yd)	900	$	600.00
HP	Helical Piers (each)	2300	$	2,300.00
CS	12" concrete Shearwall (sq ft)	25	$	30.00
ST	Cost per lb of steel (installed)	2	$	2.50
FW	5/16" fillet weld (per inch)	1.5	$	1.50
D	Arch, Mecha and Elec Demolition	5	$	8.00
A	Arch, Mech and Elec Put Back (sq ft floor space)	30	$	20.00
W	Wall put back (lin ft)	150	$	150.00
DS	Drag Struts (lin ft)	200	$	200.00
BFC	Braced frame connections at floor (each)	750	$	750.00
EWD	Exterior Wall demolition	8	$	8.00
EWF	Exterior Wall put back	25	$	45.00
RDC	Roof Diaphragm Connectios (lin ft)	35	$	200.00

		Quantity	Units		Cost/unit		Cost
Building							
Braced Frames							
Anchor Bolts		0	bolts	$	150.00	$	-
New Braced Frame Steel	ST	30519	lbs steel	$	2.50	$	76,297.50
Welds for BF connection	FW	18816	inches	$	1.50	$	28,224.00
Gussets		8010	lbs steel	$	2.00	$	16,020.00
Diphragm Connection	RDC	752	lin ft	$	200.00	$	150,400.00
Footing and Foundation							
New Footing at BF(Augmentation)	CF	0	Cu Yds	$	600.00	$	-
		0	Cu Yds	$	-	$	-
InFill Floor at Braced Frames		1110	sq ft	$	230.00	$	255,300.00
	ST	0	lbs steel	$	2.50	$	-
Concrete Shear Wall							
Wall Concrete	CS	1050	sq ft	$	30.00	$	31,500.00
New Footing at CW(Augmentation)	CF	0	Cu Yds	$	600.00	$	-
New SOB	CF	0	Cu Yds	$	600.00	$	-
Diphragm Connection	RDC	120	lin ft	$	200.00	$	24,000.00
Demolition and Replace							
Demo Existing SOG		0	sq ft	$	2.00	$	-
Demo existing Masonry Wall	EWD	2390	sq ft	$	8.00	$	19,120.00
Demo Existing arch ceiling	D	4820	sq ft	$	8.00	$	38,560.00
		0	lin ft	$	-	$	-
Replace Slab on Grade		0	sq ft	$	4.00	$	-
Replace Existing Ext Wall	EWF	2390	sq ft	$	45.00	$	107,550.00
Replace Ceiling	A	4820	sq ft	$	20.00	$	96,400.00
		0		$	-	$	-
'Mech/Elec/Plumb		1	lump	$	12,000.00	$	12,000.00

RE&A

Public Barricades and Protection	PB	0	allowance	$	10,000.00	$	-
						$	**855,371.50**
Total Area of the Building		120807	sq ft			**$**	**7.08**

Note:
The cost listed above are not included the items as follows; the new additions at the south and north entry, the architectural interior remodel, the infill of existing stair, mechanical and electrical work relating to the listed item above; mobilization, overhead, profit, design fee, and special inspection.

RE&A

Appendix B

ASCE/SEI 31-03 Checklist

3.7.3 Basic Structural Checklist for Building Type S1: Steel Moment Frames with Stiff Diaphragms

This Basic Structural Checklist shall be completed where required by table 3-2.

Each of the evaluation statements on this checklist shall be marked Complaint (C), Non-compliant (NC), or Not Applicable (N/A) for Tier 1 Evaluation. Compliant statements identify issues that are acceptable according tot eh criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

C3.7.3 Basic Structural Checklist for Building Type S1

These buildings consist of a frame assembly of steel beams and steel columns. Floor and roof framing consists of cast-in-place concrete slabs or metal deck with concrete fill supported on steel beams, open web joists, steel trusses. Lateral forces are resisted by steel moment frames that develop their stiffness through rigid or semi-rigid beam-column connections. Where all connections are moment-resisting connection, the entire frame participates in lateral force resistant. Where only selected connections are moment-resisting connections, resistance is provided along discrete frame lines. Columns are oriented so that each principal direction of the building has columns resisting forces in strong axis bending. Diaphragms consist of concrete or metal deck with concrete fill and are stiff relative tot eh frames. Where the exterior of the structure is concealed, walls consist of metal panel curtain walls, glazing, brick masonry, or precast concrete panels. Where the interior of the structure is finished, frames are concealed by ceilings, partition walls, and architectural column furring. Foundations consist of concrete spread footings or deep pile foundations.

Building System

C	NC	N/A	LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation (Tier 2: Sec. 4.3.1.1)
C	NC	N/A	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building shall be greater than 4 percent of the height of the shorter building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.1.2)
C	NC	N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)
C	NC	N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80% of the strength in an adjacent story above or below for Life-Safety and Immediate Occupancy.. (Tier 2: Sec. 4.3.2.1)
C	NC	N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the lateral-force-resisting system stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2.)
C	NC	N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2:

			Sec. 4.3.2.3)
C	NC	N/A	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)
C	NC	N/A	MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)
C	NC	N/A	TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be lass than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.3.3)
C	NC	N/A	DETERIORATION OF STEEL: There shall be no visible rusting, corrosion, cracking or other deterioration in any of the steel elements or connections in the vertical- or lateral-force-resisting systems. (Tier 2: Sec. 4.3.3.3)
C	NC	N/A	DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical-or lateral-forcing-resisting elements. (Tier 2: Sec. 4.3.3.4)

Lateral Force Resisting System

C	NC	N/A	REDUNDANCY: The number of lines of moment frames in each principle direction shall be greater than or equal 2 for Life Safety and Immediate Occupancy. The number of bays of moment frames in each line shall be greater than 2 of Life Safety and 3 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.2)
C	NC	N/A	INTERFERING WALLS: All concrete and masonry infill walls placed in moment frames shall be isolated from structural elements. (Tier 2: Sec. 4.4.1.2.1)
C	NC	N/A	DRIFT CHECK: The drift ratio of the steel moment frames, calculated using the Quick Check procedure of Section 3.4.3.1, shall be less than 0.025 for Life Safety and 0.015 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.1)
C	NC	N/A	AXIAL STRESS CHECK: The axial stress due to gravity loads in columns subjected to overturning forces shall be less than $0.10F_y$ for Life Safety and Immediate Occupancy. Alternatively, the axial stress due to overturning forces alone, calculated using the Quick Check Procedure of Section 3.5.3.6, shall be less than $0.30F_y$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.2)

Connections

C	NC	N/A	TRANSFER TO STEEL FRAMES: Diaphragms shall be connected for transfer of loads to the steel frames for Life Safety and the connections shall be able to develop the lesser of the strength of the frames or the diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.2)
C	NC	N/A	STEEL COLUMNS: The columns in lateral-force-resisting frames shall be anchored to the building foundation for Life Safety and the anchorage shall be able to develop the lesser of the tensile capacity of the column, the tensile capacity of the lowest level column splice (if any), or the uplift capacity of the foundation, for Immediate Occupancy. (Tier 2: Sec. 4.6.3.1)

3.7.3S Supplemental Structural Checklist For Building Type S1: Steel Moment Frames With Stiff Diaphragms

This Supplemental Structural Checklist shall be completed when required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral Force Resisting System

C	NC	N/A	MOMENT-RESISTING CONNECTIONS: All moment connections shall be able to develop the strength of the adjoining members or panel zones. (Tier 2: Sec. 4.4.1.3.3)
C	NC	N/A	PANEL ZONES: All panel zones shall have the shear capacity to resist the shear demand required to develop0.8 times the sum of the flexural strengths of the girders framing in at the face of the column. (Tier 2 Sec. 4.4.1.3.4)
C	NC	N/A	COLUMN SPLICES: All column splice details located in moment-resisting frames shall include connection of both flanges and the web for Life Safety, and the splice shall develop the strength of the column for Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.5_
C	NC	N/A	STRONG COLUMN/WEAK BEAM: The percentage of strong column/weak beam joints in each story of each line of moment-resisting frames shall be greater than 50 percent for Life Safety and Immediate Occupancy. (Tier 2 Sec. 4.4.1.3.6)
C	NC	N/A	COMPACT MEMBERS: All frame elements shall meet section requirements set forth by Seismic Provisions for Structural Steel Buildings Table I-9-1 (AISC, 1997). (Tier 2: Sec. 4.4.1.3.7)
C	NC	N/A	BEAM PENETRATIONS: All openings in frame-beam webs shall be less than ¼ of the beam depth and shall be located in the center half of the beams. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.9)
C	NC	N/A	GIRDER FLANGE CONTINUITY PLATES: There shall be girder flange continuity plates at all moment-resisting frame joints. This statement shall apply tot eh Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.8)
C	NC	N/A	OUT-OF-PLANE BRACING: Braced frame connections attached to beam bottom flanges located away from beam-column joints shall be braced out-of-plane at the bottom flange of the beams. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.3.1.6)
C	NC	N/A	BOTTOM FLANGE BRACING: The bottom flanges of beams shall be braced out-of-plane. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.11)

Diaphragms

C	NC	N/A	PLAN IRREGULATIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)
C	NC	N/A	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

Connections

C	NC	N/A	UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

3.7.7 Basic Structural Checklist for Building Type S5: Steel Frames with Infill Masonry Shear Walls and Stiff Diaphragms

This Basic Structural Checklist shall be completed when required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked compliant (C), non-compliant (NC), or not applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the user may choose to conduct further investigation using the corresponding Tier 2 evaluation procedure; the section numbers in parentheses following each evaluation statement correspond to Tier 2 evaluation procedures.

C3.7.7 Basic Structural Checklist for Building Type S5

This is an older type of building construction that consists of a frame assembly of steel beams and steel columns. The floors and roof consist of cast-in-place concrete slabs or metal deck with concrete fill. Framing consists of steel beams, open web joists or steel trusses. Walls consist of infill panels constructed of solid clay brick, concrete block, or hollow clay tile masonry. Infill walls may completely encase the frame members, and present a smooth masonry exterior with no indication of the frame. The seismic performance of this type of construction depends on the interaction between the frame and infill panels. The combined behavior is more like a shear wall structure than a frame structure Solidly infilled masonry panels form diagonal compression struts between the intersections of the frame members. If the walls are offset from the frame and do not fully engage the frame members, the diagonal compression struts will not develop. The strength of the infill panel is limited by the shear capacity of the masonry bed joint or the compression capacity of the strut. The post-cracking strength is determined by an analysis of a moment frame that is partially restrained by the cracked infill. The diaphragms consist of concrete floors and are stiff relative to the walls.

Building System

C NC N/A LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)

C NC N/A MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)

C NC N/A WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80% of the strength in an adjacent story above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)

C NC N/A SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)

C NC N/A GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses. (Tier 2: Sec. 4.3.2.3)

C NC N/A VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)

North Masonry Shear Walls stop at parking level

C NC N/A MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.5)

C NC N/A TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

C NC N/A DETERIORATION OF STEEL: There shall be no visible rusting, corrosion, cracking, or other deterioration in any of the steel elements or connections in the vertical- or lateral-force-resisting systems. (Tier 2: Sec. 4.3.3.3)

C NC N/A DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4)

C NC N/A MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7)

C NC N/A MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec.4.3.3.8)

C NC N/A CRACKS IN INFILL WALLS: There shall be no existing diagonal cracks in infill walls that extend throughout a panel, are greater than 1/8" for Life Safety and 1/16" for Immediate Occupancy, or have out-of-plane offsets in the bed joint greater than 1/8" for Life Safety and 1/16" for Immediate Occupancy. (Tier 2: Sec. 4.3.3.12)

Lateral Force Resisting System

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C NC N/A SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check Procedure of Section 3.5.3.3, shall be less than 70 psi for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.4.1)

133 psi > 70 psi

C NC N/A SHEAR STRESS CHECK: The shear stress in the unreinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 30 psi for clay units and 70 psi for concrete units for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.5.1)

C NC N/A WALL CONNECTIONS: Masonry shall be in full contact with frame for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.6.1)

Connections

C NC N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2 Sec. 4.6.2.1)

C NC N/A STEEL COLUMNS: The columns in lateral-force-resisting frames shall be anchored to the building foundation for Life Safety and the anchorage shall be able to develop the lesser of the tensile capacity of the column, the column splice, or the foundation, for Immediate Occupancy. (Tier 2: Sec. 4.6.3.1)

3.7.7S Supplemental Structural Checklist for Building Type S5: Steel Frames with Infill Masonry Shear Walls and Stiff Diaphragms

This Supplemental Structural Checklist shall be completed when required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral Force Resisting System

C NC N/A REINFORCING AT OPENINGS: All wall openings that interrupt rebar shall have trim reinforcing on all sides. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.4.3)

C NC N/A PROPORTIONS: The height-to-thickness ratio of the infill walls at each story shall be less than 9 for Life Safety in regions of high seismicity, 13 for Immediate Occupancy in regions of moderate seismicity, and 8 for Immediate Occupancy in regions of high seismicity. (Tier 2: Sec. 4.4.2.6.2)

$13.75' \times 12 / 16'' = 10.3 < 13$

C NC N/A SOLID WALLS: The infill walls shall not be of cavity construction. (Tier 2: Sec. 4.4.2.6.3)

Diaphragms

C NC N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

C NC N/A DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

Connections

C NC N/A ANCHOR SPACING: Exterior ~~masonry~~ walls shall be anchored to the floor and roof systems at a spacing of 4 ft. or less for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.6.1.3)

C NC N/A LATERAL LOAD AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

3.7.6 Basic Structural Checklist for Building Type S4: Steel Frames with Concrete Shear Walls

This Basic Structural Checklist shall be completed when required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked compliant (C), non-compliant (NC), or not applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 evaluation procedure; the section numbers in parentheses following each evaluation statement correspond to Tier 2 evaluation procedures.

C3.7.6 Basic Structural Checklist for Building Type S4

These buildings consist of a frame assembly of steel beams and steel columns. The floors and roof consist of cast-in-place concrete slabs or metal deck with or without concrete fill. Framing consists of steel beams, open web joists or steel trusses. Lateral forces are resisted by cast-in-place concrete shear walls. These walls are bearing walls when the steel frame does not provide a complete vertical support system. In older construction the steel frame is designed for vertical loads only. In modern dual systems, the steel moment frames are designed to work together with the concrete shear walls in proportion to their relative rigidity. In the case of a dual system, the walls shall be evaluated under this building type and the frames shall be evaluated under S1 or S1A, Steel Moment Frames. Diaphragms consist of concrete or metal deck with or without concrete fill. The steel frame may provide a secondary lateral-force-resisting system depending on the stiffness of the frame and the moment capacity of the beam-column connections.

Building System

C	NC	N/A	LOAD PATH: The structure shall contain one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)
C	NC	N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)
C	NC	N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80% of the strength in an adjacent story above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)
C	NC	N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70% of the stiffness in an adjacent story above or below or less than 80% of the average stiffness of the three stories above or below for Life-Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)
C	NC	N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30% in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses. (Tier 2: Sec. 4.3.2.3)
C	NC	N/A	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)

C NC N/A — MASS: There shall be no change in effective mass more than 50% from one story to the next for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.5)

C NC N/A — TORSION: The distance between the story center of mass and the story center of rigidity shall be less than 20% of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

C NC N/A — DETERIORATION OF STEEL: There shall be no visible rusting, corrosion, cracking, or other deterioration in any of the steel elements or connections in the vertical- or lateral-force-resisting systems. (Tier 2: Sec. 4.3.3.3)

C NC N/A — DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4)

C NC N/A — CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8" for Life Safety and 1/16" for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.9)

Lateral Force Resisting System

C NC N/A — COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical load carrying system. (Tier 2: Sec. 4.4.1.6.1)

C NC N/A — REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C NC N/A — SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 100 psi or $2\sqrt{f'c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.1)

C NC N/A — REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be greater than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18" for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.2)

C NC N/A — COLUMN SPLICES: Steel columns encased in shear wall boundary elements shall have splices that develop the tensile strength of the column. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.9)

Connections

C NC N/A — TRANSFER TO SHEAR WALLS: Diaphragms shall be reinforced and connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2 Sec. 4.6.2.1)

C NC N/A — FOUNDATION DOWELS: Walls shall be doweled into the foundation for Life Safety and the dowels shall be able to develop the lesser of the strength of the walls or the weight of the foundations for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5)

C NC N/A — SHEAR-WALL-BOUNDARY COLUMNS: The shear wall boundary columns shall be anchored to the building for Life Safety and the anchorage shall be able to develop the tensile capacity of the column for Immediate Occupancy. (Tier 2: Sec.4.6.3.6)

3.7.6S Supplemental Structural Checklist for Building Type S4: Steel Frames with Concrete Shear Walls

This Supplemental Structural Checklist shall be completed when required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral Force Resisting System

C NC N/A COUPLING BEAMS: The stirrups in all coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the core with hooks of 135° or more for Life Safety and Immediate Occupancy. In addition, the beams shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.3)

C NC N/A OVERTURNING: All shear walls shall have aspect ratios less than 4 to 1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.4)

C NC N/A CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2.0, the boundary elements shall be confined with spirals or ties with spacing less than 8 d_b. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.5)

C NC N/A REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.6)

C NC N/A WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the minimum unsupported height or length, nor less than 4". This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.7)

C NC N/A WALL CONNECTIONS: There shall be a positive connection between the shear walls and the steel beams and columns for Life Safety and the connection shall be able to develop the strength of the walls for Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.8)

Diaphragms

C NC N/A OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25% of the wall length for Life Safety and 15% of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)

C NC N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

C NC N/A DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50% of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

Connections

C NC N/A LATERAL LOAD AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

Story Shears

Location	W	H	WH	Vj	Vbj
1st FL	2,107.00	13.75	28,971.3	874.74	11,372.84
2nd FL	2,140.00	28.42	60,818.8	1,836.33	10,498.10
3rd FL	2,107.00	42.17	88,852.2	2,682.75	8,661.77
4th FL	2,238.00	55.92	125,149.0	3,778.68	5,979.02
Roof	1,046.00	69.67	72,874.8	2,200.34	2,200.34
	0.00	0	0.0	0.00	0.00
	0.00	0	0.0	0.00	0.00
	0.00	0	0.0	0.00	0.00
	9,638.00		**376,666.0**	**11,372.84**	

	1st FL	2,107.00	13.75	28,971.3	874.74	11,372.84
	2nd FL	2,140.00	28.42	60,818.8	1,836.33	10,498.10
	3rd FL	**2,107.00**	42.17	88,852.2	2,682.75	8,661.77
	4th FL	2,238.00	55.92	125,149.0	3,778.68	5,979.02
	Roof	1,046.00	69.67	72,874.8	2,200.34	2,200.34
		9,638.00		376,666.0	**8,661.77**	

Story Drift

ASCE 31-03 3.5.3.1

Location	NS Direction									EW Direction							
	#Cols	Vc	Typ Col	Col I	Col H	Typ Beam	Beam I	Beam L	DR	#Cols	Typ Col	Col I	Col H	Typ Beam	Beam I	Beam L	DR
1st FL	16.00	710.80	W14x90	999.00	13.75	W24x68	1830.00	18	0.095	16.00	W14x90	999.00	13.75	w24x76	2100.00	49	0.150
2nd FL	16.00	656.13	W14x90	999.00	14.67	W24x68	1830.00	18	0.098	16.00	W14x90	999.00	14.67	W24x76	2100.00	49	0.026
3rd FL	16.00	541.36	W14x61	640.00	13.75	W24x68	1830.00	18	0.096	16.00	w14x61	640.00	13.75	W24x76	2100.00	49	0.138
4th FL	16.00	373.69	W14x61	640.00	13.75	W24x68	1830.00	18	0.067	16.00	w14x61	640.00	13.75	W24x76	2100.00	49	0.095
Roof	16.00	137.52	W10x33	170.00	13.75	W12x26	204.00	18	0.132	16.00	w10x33	170.00	13.75	W24x76	2100.00	49	0.082
1st FL	16.00	710.80	w14x90	999.00	13.75	w24x68	1830.00	18	0.095	16.00	w14x90	999.00	13.75	w24x76	2100.00	49	0.150
2nd FL	16.00	656.13	w14x90	999.00	14.67	w24x68	1830.00	18	0.098	16.00	w14x90	999.00	14.67	w24x76	2100.00	49	0.151
3rd FL	16.00	541.36	w14x61	640.00	13.75	w24x68	1830.00	18	0.096	16.00	w14x61	640	13.75	w24x76	2100.00	49	0.138
4th FL	16.00	373.69	w14x61	640.00	13.75	w24x68	1830.00	18	0.067	16.00	w14x61	640.00	13.75	w24x76	2100.00	49	0.095
Roof	16.00	137.52	w10x33	170.00	13.75	W12x26	204.00	18	0.132	16.00	w10x33	170.00	13.75	w24x76	2100.00	49	0.082

< 0.025 for Life Safety

Axial Stress

ASCE 31-03 3.5.3.6

Location	Column	Col A	Axial Load	Axial Stres	Limit
1st FL	W14x90	26.50	108.49	4.09	10.80
2nd FL	W14x90	26.50	80.79	3.05	10.80
3rd FL	w14x61	17.90	52.07	2.91	10.80
4th FL	w14x61	17.90	30.04	1.68	10.80
Roof	w10x33	9.71	9.85	1.01	10.80
N-S Direction					
1st FL	w14x90	26.50	430.58	16.25	10.80
2nd FL	w14x90	26.50	320.64	12.10	10.80
3rd FL	w14x61	17.9	206.65	11.54	10.80
4th FL	w14x61	17.90	119.25	6.66	10.80
Roof	w10x33	9.71	39.09	4.03	10.80

Panel Zones

Location	Column	Beam	dz	wz	tz	Beam 0.8Mp	Shear Demand	Shear Capacity	Panel Zone
1st FL	W14x90	W24x68	22.53	12.58	0.44	5097.60	226.2583	199.2672	No Good
2nd FL	W14x90	W24x68	22.53	12.58	0.44	5097.60	226.2583	199.2672	No Good
3rd FL	w14x61	W24x68	22.53	12.61	0.38	5097.60	226.2583	170.235	No Good
4th FL	w14x61	W24x68	22.53	12.61	0.38	5097.60	226.2583	170.235	No Good
Roof	w10x33	W12x26	11.44	8.86	0.29	1071.36	93.65035	92.4984	No Good
1st FL	w14x90	w24x76	22.54	12.58	0.44	5760.00	255.5457	199.2672	No Good
2nd FL	w14x90	w24x76	22.54	12.58	0.44	5760.00	255.5457	199.2672	No Good
3rd FL	w14x61	w24x76	22.54	12.61	0.38	5760.00	255.5457	170.235	No Good
4th FL	w14x61	w24x76	22.54	12.61	0.38	5760.00	255.5457	170.235	No Good
Roof	w10x33	w24x76	22.54	8.86	0.29	5760.00	255.5457	92.4984	No Good

Beam Column Ratio

Location	Column Below	Column Above	Beam 1	Beam 2	SC/WB
1st FL	W14x90	w14x90	w24x68	w24x68	0.570
2nd FL	W14x90	w14x61	W24x68	W24x68	0.581
3rd FL	w14x61	w14x61	w24x68	w24x68	0.576
4th FL	w14x61	w10x33	w24x68	w24x68	0.508
Roof	w10x33	w10x33	w12x26	w12x26	0.788

Compactness

Location	Column	h/t	b/t	Compact	Beam			
1st FL	W14x90	31.82	10.211	Fails	w24x68	57.108	7.667	OK
2nd FL	W14x90	31.82	10.211	Fails	W24x68	57.108	7.667	OK
3rd FL	w14x61	37.07	7.744	OK	w24x68	57.108	7.667	OK
4th FL	w14x61	37.07	7.744	OK	w24x68	57.108	7.667	OK
Roof	w10x33	33.55	9.149	Fails	w12x26	53.043	8.539	OK

REAVELEY ENGINEERS & ASSOCIATES, INC.

Column Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*

Software Version: *0.98*

Last Update: 20-Dec-04

Project : Unversity College of Nursing

Building :

Date : 02/02/05

Frame Line : Grid line 1 and F

General Input	Level	ROOF	4th FL	3rd FL	2nd FL	1st FL	Roof
	Location	1/G	1/G	1/G	1/G	1/G	2/F
	Size	W10x33	W14x61	W14x61	W14x90	W14x90	W10x33
	Interaction	0.22	0.27	0.33	0.37	0.58	0.49
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
	L_b	13.75 ft	13.75 ft	13.75 ft	13.75 ft	14.00 ft	13.75 ft
	K_X	1.27	1.22	1.25	1.45	1.35	1.19
	K_Y	1.00	1.00	1.00	1.00	1.00	1.05
Loads	Q_{UF} (Axial)	36 k	135 k	148 k	329 k	817 k	33 k
	Q_{UDX} (Moment)	58 k-ft	325 k-ft	436 k-ft	598 k-ft	342 k-ft	229 k-ft
	Q_{UDY} (Moment)	0 k-ft	0 k-ft	0 k-ft	0 k-ft	0 k-ft	14 k-ft
Axial	Q_{CE}	238.8552512	507.5245172	507.5245172	859.1734735	855.8791865	229.7114443
	r_X	4.19	5.98	5.98	6.14	6.14	4.19
	r_Y	1.94	2.45	2.45	3.7	3.7	1.94
	KL/r	85.05	67.35	67.35	44.59	45.41	89.30
	λ_c	0.9539	0.7553	0.7553	0.5001	0.5092	1.0016
	λ_r	15.8941	15.8941	15.8941	15.8941	15.8941	15.8941
	F_{cr}	24.5989	28.3533	28.3533	32.4216	32.2973	23.6572
	A	9.71	17.9	17.9	26.5	26.5	9.71
Bending X	m^*Q_{ceX}	800.9501761	2324.386409	2324.386409	3264.139535	3264.139535	800.9501761
	m	7.66	8.00	8.00	6.93	6.93	7.66
	Q_{ceX} (C_b=1.0)	104.5246057	290.5483011	290.5483011	471	471	104.5246057
	M_{pX}	116.4	306	306	471	471	116.4
	Z_X	38.8	102	102	157	157	38.8
	S_X	35	92.1	92.1	143	143	35
	M_{rX}	75.83	199.55	199.55	309.83	309.83	75.83
	L_{pX}	8.08	10.20	10.20	15.40	15.40	8.08
	L_{rY}	27.46	34.66	34.66	54.13	54.13	27.46
Bending Y	m^*Q_{ceY}	124.20	290.25	290.25	673.65	673.65	124.20
	m	3.00	3.00	3.00	3.00	3.00	3.00
	Q_{ceY} (C_b=1.0)	41.4	96.75	96.75	224.55	224.55	41.4
	M_{pY}	41.40	96.75	96.75	224.55	224.55	41.40
	Z_Y	14	32.8	32.8	75.6	75.6	14
	S_Y	9.2	21.5	21.5	49.9	49.9	9.2
	M_{rY}	19.93	46.58	46.58	108.12	108.12	19.93
	L_{pX}	17.44	24.89	24.89	25.56	25.56	17.44
	L_{rY}	59.31	84.61	84.61	89.83	89.83	59.31
Bending Calcs	X_1	2720	2720	2720	2900	2900	2720
	X_2	0.00248	0.00247	0.00247	0.00175	0.00175	0.00248
	F_L	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi
	$b/2t_f{}^*F_y{}^{0.5}$	54.9	46.5	46.5	61.2	61.2	54.9
	$h/t_w{}^*F_y{}^{0.5}$	162.6	182.4	182.4	155.4	155.4	162.6

REAVELEY ENGINEERS & ASSOCIATES, INC.

Column Analysis

FEMA310, ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*

Software Version: 0.98

Last Update: 20-Dec-04

Project : University of Utah College of Nursing

Building :

Date : 01/07/05

Frame Line : Grid line 1 and F

General Input	Level	4th FL	3rd FL	2nd FL	1st FL	Level 3	Level 2
	Location	2/F	2/F	2/F	2/F		
	Size	W14x61	w14x61	w14x99	w14x99	W14x99	w14x99
	Interaction	0.64	0.71	0.69	0.59	0.00	0.00
	F_Y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
	L_b	13.75 ft	13.75 ft	13.75 ft	13.75 ft	14.00 ft	16.00 ft
	K_X	1.38	1.51	1.64	2.18	1.50	1.95
	K_Y	1.03	1.05	1.09	1.73	1.00	1.00
Loads	Q_{UF} (Axial)	129 k	226 k	324 k	420 k	0 k	0 k
	Q_{UDX} (Moment)	701 k-ft	543 k-ft	820 k-ft	400 k-ft	0 k-ft	0 k-ft
	Q_{UDY} (Moment)	60 k-ft	72 k-ft	229 k-ft	156 k-ft	0 k-ft	0 k-ft
Axial	Q_{CE}	500.1978121	495.2539294	925.6916701	767.0936006	940.4015576	862.9980779
	r_X	5.98	5.98	6.17	6.17	6.17	6.17
	r_Y	2.45	2.45	3.71	3.71	3.71	3.71
	KL/r	69.37	70.71	48.48	76.94	45.28	60.68
	λ_c	0.7780	0.7931	0.5437	0.8629	0.5079	0.6805
	λ_r	15.8941	15.8941	15.8941	15.8941	15.8941	15.8941
	F_{cr}	27.9440	27.6678	31.8107	26.3606	32.3162	29.6563
	A	17.9	17.9	29.1	29.1	29.1	29.1
Bending X	$m*Q_{ceX}$	2324.386409	2324.386409	3908.190698	3908.190698	3908.190698	3890.654669
	m	8.00	8.00	7.53	7.53	7.53	7.53
	Q_{ceX} (C_b=1.0)	290.5483011	290.5483011	519	519	519	516.6712501
	M_{pX}	306	306	519	519	519	519
	Z_X	102	102	173	173	173	173
	S_X	92.1	92.1	157	157	157	157
	M_{rX}	199.55	199.55	340.17	340.17	340.17	340.17
	L_{pX}	10.20	10.20	15.44	15.44	15.44	15.44
	L_{rY}	34.66	34.66	58.16	58.16	58.16	58.16
Bending Y	$m*Q_{ceY}$	290.25	290.25	745.20	745.20	745.20	745.20
	m	3.00	3.00	3.00	3.00	3.00	3.00
	Q_{ceY} (C_b=1.0)	96.75	96.75	248.4	248.4	248.4	248.4
	M_{pY}	96.75	96.75	248.40	248.40	248.40	248.40
	Z_Y	32.8	32.8	83.6	83.6	83.6	83.6
	S_Y	21.5	21.5	55.2	55.2	55.2	55.2
	M_{rY}	46.58	46.58	119.60	119.60	119.60	119.60
	L_{pX}	24.89	24.89	25.68	25.68	25.68	25.68
	L_{rY}	84.61	84.61	96.72	96.72	96.72	96.72
Bending Calcs	X_1	2720	2720	3190	3190	3190	3190
	X_2	0.00247	0.00247	0.00122	0.00122	0.00122	0.00122
	F_L	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi
	$b/2t_f*F_y^{0.5}$	46.5	46.5	56.04	56.04	56.04	56.04
	$h/t_w*F_y^{0.5}$	182.4	182.4	141	141	141	141

REAVELEY ENGINEERS & ASSOCIATES, INC.

Beam Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*

Software Version: 0.98

Last Update: 20-Dec-04

Project : University of Utah College of Nursing
Building :
Date : 02/02/05

Frame Line : Grid line 1 and F

General Input	Level	ROOF	4th FL	3rd FL	2nd FL	1st FL	Roof
	Location	1/G-F	1/G-F	1/G-F	1/G-F	1/G-F	F/1-2
	Size	W12x26	W24X68	W24x68	W24x68	W24X68	w24x76
	Interaction	0.14	0.10	0.16	0.19	0.17	1.09
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
	L_b	18.00 ft	18.00 ft	18.00 ft	18.00 ft	18.00 ft	48.50 ft
Loads	Q_{UD} (Moment)	79 k-ft	322 k-ft	507 k-ft	600 k-ft	520 k-ft	232 k-ft
	Q_{UD} (Shear)	18.4 k	52.0 k	71.0 k	82.0 k	72.0 k	20.0 k
Bending X	$m*Q_{ceX}$	581.69	3146.76	3146.76	3146.76	3146.76	213.12
	m	8.00	8.00	8.00	8.00	8.00	8.00
	Q_{ceX} (C_b=1.0)	72.71	393.34	393.34	393.34	393.34	26.64
	M_{pX}	111.6	531	531	531	531	600
	Z_X	37.2	177	177	177	177	200
	S_X	33.4	154	154	154	154	176
	M_{rX}	72.37	333.67	333.67	333.67	333.67	381.33
	L_{pX}	6.29	7.78	7.78	7.78	7.78	7.99
	L_{rY}	18.10	22.43	22.43	22.43	22.43	23.44
	r_X	5.17	9.55	9.55	9.55	9.55	9.69
	r_Y	1.51	1.87	1.87	1.87	1.87	1.92
	X_1	1820	1590	1590	1590	1590	1760
	X_2	0.0139	0.029	0.029	0.029	0.029	0.0186
	F_L	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi
	$b/2t_f*F_y^{0.5}$	51.24	45.96	45.96	45.96	45.96	39.66
	$h/t_w*F_y^{0.5}$	283.2	312	312	312	312	294
Shear	$m*Q_{ce}$	484.9	1699.6	1699.6	1699.6	1699.6	1817.2
	m	8.00	8.00	8.00	8.00	8.00	8.00
	Q_{ce}	60.61	212.45	212.45	212.45	212.45	227.15
	A_w	2.806	9.8355	9.8355	9.8355	9.8355	10.516

REAVELEY ENGINEERS & ASSOCIATES, INC.

Beam Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*

Software Version: *0.98*

Last Update: 20-Dec-04

Project : University of Utah College of Nursing

Building :

Date : 02/02/05

Frame Line : Grid line 1 and F

General Input	Level	4th Fl	3rd FL	2nd FL	1st FL	Roof	4th FL
	Location	F/1-2	F/1-2	F/1-2	F/1-2	F/2-3	F/2-3
	Size	w24x76	w24x76	w24x76	w24x76	w18x46	w18x46
	Interaction	3.13	3.89	4.03	3.39	0.48	1.43
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
	L_b	48.50 ft	48.50 ft	48.50 ft	48.50 ft	30.50 ft	30.50 ft
Loads	Q_{UD} (Moment)	668 k-ft	828 k-ft	858 k-ft	722 k-ft	173 k-ft	516 k-ft
	Q_{UD} (Shear)	40.5 k	44.0 k	44.0 k	42.0 k	16.0 k	44.0 k
Bending X	$m*Q_{ceX}$	213.12	213.12	213.12	213.12	361.88	361.88
	m	8.00	8.00	8.00	8.00	8.00	8.00
	Q_{ceX} (C_b=1.0)	26.64	26.64	26.64	26.64	45.24	45.24
	M_{pX}	600	600	600	600	272.1	272.1
	Z_X	200	200	200	200	90.7	90.7
	S_X	176	176	176	176	78.8	78.8
	M_{rX}	381.33	381.33	381.33	381.33	170.73	170.73
	L_{pX}	7.99	7.99	7.99	7.99	5.37	5.37
	L_{rY}	23.44	23.44	23.44	23.44	16.60	16.60
	r_X	9.69	9.69	9.69	9.69	7.25	7.25
	r_Y	1.92	1.92	1.92	1.92	1.29	1.29
	X_1	1760	1760	1760	1760	2060	2060
	X_2	0.0186	0.0186	0.0186	0.0186	0.0101	0.0101
	F_L	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi
	$b/2t_f*F_y^{0.5}$	39.66	39.66	39.66	39.66	30.06	30.06
	$h/t_w*F_y^{0.5}$	294	294	294	294	267.6	267.6
Shear	$m*Q_{ce}$	1817.2	1817.2	1817.2	1817.2	1126.0	1126.0
	m	8.00	8.00	8.00	8.00	8.00	8.00
	Q_{ce}	227.15	227.15	227.15	227.15	140.75	140.75
	A_w	10.516	10.516	10.516	10.516	6.516	6.516

REAVELEY ENGINEERS & ASSOCIATES, INC.

Beam Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*

Software Version: *0.98*

Last Update: 20-Dec-04

Project : University of Utah College of Nursing

Building :

Date : 02/02/05

Frame Line : Grid line 1 and F

General Input	Level	3rd FL	2nd FL	1st FL	ROOF	Level 3	Level 2
	Location	F/2-3	F/2-3	F/2-3			
	Size	w18x46	w18x46	w18x46	W21X44	W24X68	W27X84
	Interaction	1.80	1.87	1.49	0.00	0.00	0.00
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
	L_b	30.50 ft	30.50 ft	30.50 ft	15.00 ft	15.00 ft	15.00 ft
Loads	Q_{UD} (Moment)	652 k-ft	676 k-ft	540 k-ft	0 k-ft	0 k-ft	0 k-ft
	Q_{UD} (Shear)	54.0 k	56.0 k	47.0 k	0.0 k	0.0 k	0.0 k
Bending X	$m*Q_{ceX}$	361.88	361.88	361.88	1451.07	3470.15	5005.25
	m	8.00	8.00	8.00	8.00	8.00	8.00
	Q_{ceX} (C_b=1.0)	45.24	45.24	45.24	181.38	433.77	625.66
	M_{pX}	272.1	272.1	272.1	286.2	531	732
	Z_X	90.7	90.7	90.7	95.4	177	244
	S_X	78.8	78.8	78.8	81.6	154	213
	M_{rX}	170.73	170.73	170.73	176.80	333.67	461.50
	L_{pX}	5.37	5.37	5.37	5.25	7.78	8.62
	L_{rY}	16.60	16.60	16.60	15.43	22.43	24.85
	r_X	7.25	7.25	7.25	8.06	9.55	10.7
	r_Y	1.29	1.29	1.29	1.26	1.87	2.07
	X_1	2060	2060	2060	1550	1590	1570
	X_2	0.0101	0.0101	0.0101	0.0366	0.029	0.0311
	F_L	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi	26 ksi
	$b/2t_f*F_y^{0.5}$	30.06	30.06	30.06	43.32	45.96	46.68
	$h/t_w*F_y^{0.5}$	267.6	267.6	267.6	321.6	312	316.2
Shear	$m*Q_{ce}$	1126.0	1126.0	1126.0	1251.9	1699.6	2122.3
	m	8.00	8.00	8.00	8.00	8.00	8.00
	Q_{ce}	140.75	140.75	140.75	156.49	212.45	265.29
	A_w	6.516	6.516	6.516	7.245	9.8355	12.282

REAVELEY ENGINEERS & ASSOCIATES, INC.

Panel Zone Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*
Software Version: *0.98*
Last Update: 20-Dec-04

Project : University of Utah College of Nursing
Building :
Date : 02/02/05

Frame Line : Grid line 1 and F

General Input	Level	Roof	4th FL	3rd FL	2nd FL	1st FL	Roof
	Location	1/H	1/H	1/H	1/H	1/H	1/G
	Column	W10x33	W14x61	w14x61	W14x90	W14x90	W10x33
	Beam 1	W12x26	W24X68	W24x68	W24x68	W24x68	W12x26
	Beam 2				W21X44	W24X68	W12x26
	Continuity Plates?	Yes	Yes	Yes	Yes	Yes	Yes
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
Loads	Q_{CUF} (Axial)	68.0 k	123.0 k	122.0 k	397.0 k	943.0 k	35.0 k
	Q_{CUD} (Shear)	21.0 k	55.0 k	81.0 k	94.0 k	80.0 k	18.0 k
	Q_{B1UD} (Moment)	84 k-ft	346 k-ft	550 k-ft	650 k-ft	624 k-ft	78 k-ft
	Q_{B1UD} (Moment)				0 k-ft	0 k-ft	83 k-ft
Interaction (DCR)	Pass?	Fail	Fail	Fail	Fail	Fail	Fail
	Panel Zone	0.20	0.28	0.42	0.40	0.35	0.23
	Flange Buckling	N/A	N/A	N/A	N/A	N/A	N/A
	Web Yielding	0.13	0.08	0.13	0.12	0.12	0.12
	Web Crippling	0.09	0.05	0.08	0.07	0.06	0.09
	Strong Column /Weak Beam	0.51	0.57	0.57	0.41	0.01	0.28
Panel Zone	Q_{UD}	28.11	69.97	104.79	122.12	107.00	31.62
	$m*Q_{ce}$	137.90	247.91	247.91	306.08	306.08	137.90
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	68.95	123.95	123.95	153.04	153.04	68.95
	t_w	0.29	0.375	0.375	0.44	0.44	0.29
	b_{cf}	7.96	9.99	9.99	14.5	14.5	7.96
	t_{cf}	0.435	0.645	0.645	0.71	0.71	0.435
	t_{bf}	0.38	0.585	0.585	0.585	0.585	0.38
	d_b	12.2	23.7	23.7	23.7	23.7	12.2
	d_c	9.73	13.9	13.9	14	14	9.73
Flange Buckling	Q_{UD}	7.11	14.97	23.79	28.12	27.00	7.02
	$m*Q_{ce}$	42.575625	187.21125	187.21125	226.845	226.845	42.575625
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	21.2878125	93.605625	93.605625	113.4225	113.4225	21.2878125
	C_T	0.5	1	1	1	1	0.5
Local Web Yielding	Q_{UD}	7.11	14.97	23.79	28.12	27.00	7.02
	$m*Q_{ce}$	56.74	183.20	183.20	226.04	226.04	56.74
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	28.37	91.60	91.60	113.02	113.02	28.37
	N	0.38	0.585	0.585	0.585	0.585	0.38
	t_{bf}	0.38	0.585	0.585	0.585	0.585	0.38
	k_c	0.935	1.24	1.24	1.31	1.31	0.935
Web Crippling	Q_{UD}	7.11	14.97	23.79	28.12	27.00	7.02
	$m*Q_{ce}$	81.44	315.50	315.50	422.77	422.77	81.44
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	40.72	157.75	157.75	211.38	211.38	40.72
	N_d	-0.044	0.126	0.126	0.125	0.125	-0.044
Strong Column Weak Beam	Ratio	0.509	0.565	0.566	0.408	0.006	0.284
	Z_C	38.8	102	102	157	157	38.8
	A_C	9.71	17.9	17.9	26.5	26.5	9.71
	Z_{B1}	37.2	177	177	177	177	37.2
	Z_{B2}	0	0	0	95.4	177	37.2

REAVELEY ENGINEERS & ASSOCIATES, INC.

Panel Zone Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #________

Author: *Ben Jacobsen*

Software Version: *0.98*

Project : Unversity of Utah College of Nursing
Building :
Date : 02/02/05

Frame Line : Grid line 1 and F

General Input	Level	4th FL	3rd FL	2nd FL	1st FL	Roof	4th FL
	Location	1/G	1/G	1/G	1/G	2/F	2/F
	Column	W14x61	W14x61	W14X90	W14x90	W10x33	W14x61
	Beam 1	w24x68	w24x68	w24x68	w24x68	w24x76	w24x76
	Beam 2	w24x68	w24x68	w24x68	w24x68	w18x46	w18x46
	Continuity Plates?	Yes	Yes	Yes	Yes	Yes	Yes
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
Loads	Q_{CUF} (Axial)	103.0 k	113.0 k	329.0 k	817.0 k	33.0 k	129.0 k
	Q_{CUD} (Shear)	52.0 k	71.0 k	82.0 k	72.0 k	33.0 k	109.0 k
	Q_{B1UD} (Moment)	322 k-ft	507 k-ft	600 k-ft	506 k-ft	232 k-ft	668 k-ft
	Q_{B1UD} (Moment)	346 k-ft	550 k-ft	655 k-ft	559 k-ft	173 k-ft	516 k-ft
Interaction (DCR)	Pass?	Fail	Fail	Fail	Fail	Fail	Fail
	Panel Zone	0.33	0.47	0.45	0.39	0.39	0.65
	Flange Buckling	N/A	N/A	N/A	N/A	N/A	N/A
	Web Yielding	0.08	0.13	0.13	0.11	0.16	0.15
	Web Crippling	0.05	0.08	0.07	0.06	0.11	0.09
	Strong Column /Weak Beam	0.29	0.29	0.35	0.08	0.07	0.34
Panel Zone	Q_{UD}	80.90	116.73	136.29	118.07	50.44	159.99
	$m*Q_{ce}$	247.91	247.91	306.08	306.08	130.07	247.72
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	123.95	123.95	153.04	153.04	65.03	123.86
	t_w	0.375	0.375	0.44	0.44	0.29	0.375
	b_{cf}	9.99	9.99	14.5	14.5	7.96	9.99
	t_{cf}	0.645	0.645	0.71	0.71	0.435	0.645
	t_{bf}	0.585	0.585	0.585	0.585	0.68	0.68
	d_b	23.7	23.7	23.7	23.7	23.9	23.9
	d_c	13.9	13.9	14	14	9.73	13.9
Flange Buckling	Q_{UD}	14.97	23.79	28.34	24.18	9.99	28.77
	$m*Q_{ce}$	187.21125	187.21125	226.845	226.845	42.575625	187.21125
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	93.605625	93.605625	113.4225	113.4225	21.2878125	93.605625
	C_T	1	1	1	1	0.5	1
Local Web Yielding	Q_{UD}	14.97	23.79	28.34	24.18	9.99	28.77
	$m*Q_{ce}$	183.20	183.20	226.04	226.04	63.01	185.76
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	91.60	91.60	113.02	113.02	31.50	92.88
	N	0.585	0.585	0.585	0.585	0.68	0.68
	t_{bf}	0.585	0.585	0.585	0.585	0.68	0.68
	k_c	1.24	1.24	1.31	1.31	0.935	1.24
Web Crippling	Q_{UD}	14.97	23.79	28.34	24.18	9.99	28.77
	$m*Q_{ce}$	315.50	315.50	422.77	422.77	87.04	318.21
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	157.75	157.75	211.38	211.38	43.52	159.11
	N_d	0.126	0.126	0.125	0.125	0.080	0.147
Strong Column Weak Beam	Ratio	0.293	0.288	0.352	0.077	0.073	0.340
	Z_C	102	102	157	157	38.8	102
	A_C	17.9	17.9	26.5	26.5	9.71	17.9
	Z_{B1}	177	177	177	177	200	200
	Z_{B2}	177	177	177	177	90.7	90.7

REAVELEY ENGINEERS & ASSOCIATES, INC.

Panel Zone Analysis

ASCE 31-03 TIER 2 EVALUATION (LS)

Calculation Sheet #_______

Author: *Ben Jacobsen*

Software Version: *0.98*

Project : University of Utah College of Nursing

Building :

Date : 02/02/05

Frame Line : Grid line 1 and F

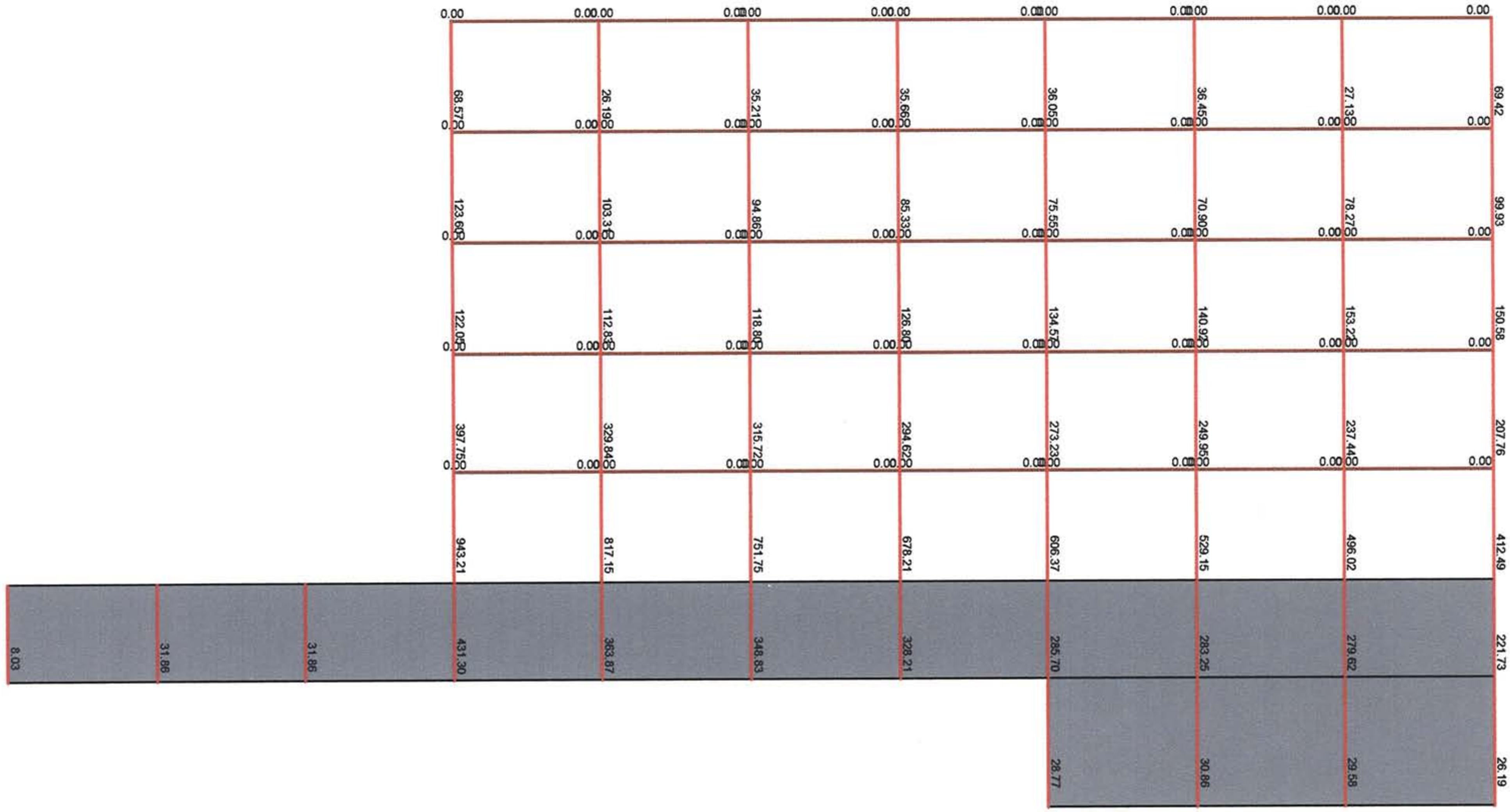
General Input	Level	3rd FL	2nd FL	1st FL	Roof	Level 3	Level 2
	Location	2/F	2/F	2/F			
	Column	W14x61	W14x99	W14x99	w	w	w
	Beam 1	w24x76	w24x76	w24x76	W21X44	W24X68	W27X84
	Beam 2	w18x46	w18x46	w18x46	W21X44	W24X68	W27X84
	Continuity Plates?	Yes	Yes	Yes	Yes	Yes	Yes
	F_y	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi	36 ksi
Loads	Q_{CUF} (Axial)	226.0 k	324.0 k	420.0 k	45.0 k	87.4 k	132.2 k
	Q_{CUD} (Shear)	90.0 k	116.0 k	41.0 k	0.0 k	119.1 k	227.7 k
	Q_{B1UD} (Moment)	827 k-ft	858 k-ft	722 k-ft	475 k-ft	1194 k-ft	2089 k-ft
	Q_{B1UD} (Moment)	652 k-ft	676 k-ft	541 k-ft	427 k-ft	1108 k-ft	2048 k-ft
Interaction (DCR)	Pass?	Fail	Fail	Fail	#N/A	#N/A	#N/A
	Panel Zone	0.62	0.53	0.28	#N/A	#N/A	#N/A
	Flange Buckling	N/A	N/A	N/A	N/A	N/A	N/A
	Web Yielding	0.19	0.14	0.12	#N/A	#N/A	#N/A
	Web Crippling	0.11	0.07	0.06	#N/A	#N/A	#N/A
	Strong Column /Weak Beam	0.28	0.50	0.43	#N/A	#N/A	#N/A
Panel Zone	Q_{UD}	153.70	182.06	95.39	44.55	218.66	386.49
	m^*Q_{ce}	247.72	345.69	345.69	#N/A	#N/A	#N/A
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	123.86	172.84	172.84	#N/A	#N/A	#N/A
	t_w	0.375	0.485	0.485	#N/A	#N/A	#N/A
	b_{cf}	9.99	14.6	14.6	#N/A	#N/A	#N/A
	t_{cf}	0.645	0.78	0.78	#N/A	#N/A	#N/A
	t_{bf}	0.68	0.68	0.68	0.45	0.585	0.64
	d_b	23.9	23.9	23.9	20.7	23.7	26.7
	d_c	13.9	14.2	14.2	#N/A	#N/A	#N/A
Flange Buckling	Q_{UD}	35.62	36.95	31.09	23.45	51.66	80.15
	m^*Q_{ce}	187.21125	273.78	273.78	#N/A	#N/A	#N/A
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	93.605625	136.89	136.89	#N/A	#N/A	#N/A
	C_T	1	1	1	0.5	1	1
Local Web Yielding	Q_{UD}	35.62	36.95	31.09	23.45	51.66	80.15
	m^*Q_{ce}	185.76	264.69	264.69	#N/A	#N/A	#N/A
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	92.88	132.35	132.35	#N/A	#N/A	#N/A
	N	0.68	0.68	0.68	0.45	0.585	0.64
	t_{bf}	0.68	0.68	0.68	0.45	0.585	0.64
	k_c	1.24	1.38	1.38	#N/A	#N/A	#N/A
Web Crippling	Q_{UD}	35.62	36.95	31.09	23.45	51.66	80.15
	m^*Q_{ce}	318.21	517.29	517.29	#N/A	#N/A	#N/A
	m	2.00	2.00	2.00	2.00	2.00	2.00
	Q_{ce}	159.11	258.65	258.65	#N/A	#N/A	#N/A
	N_d	0.147	0.144	0.144	#N/A	#N/A	#N/A
Strong Column Weak Beam	Ratio	0.276	0.498	0.432	#N/A	#N/A	#N/A
	Z_C	102	173	173	#N/A	#N/A	#N/A
	A_C	17.9	29.1	29.1	#N/A	#N/A	#N/A
	Z_{B1}	200	200	200	95.4	177	244
	Z_{B2}	90.7	90.7	90.7	95.4	177	244

RAM Frame V8.2 - Analysis Mode
DataBase: UUnursing
Member Force Envelope

02/02/05 14:04:39
Axial Loads

Max

UF



AM Frame V8.2 - Analysis Mode
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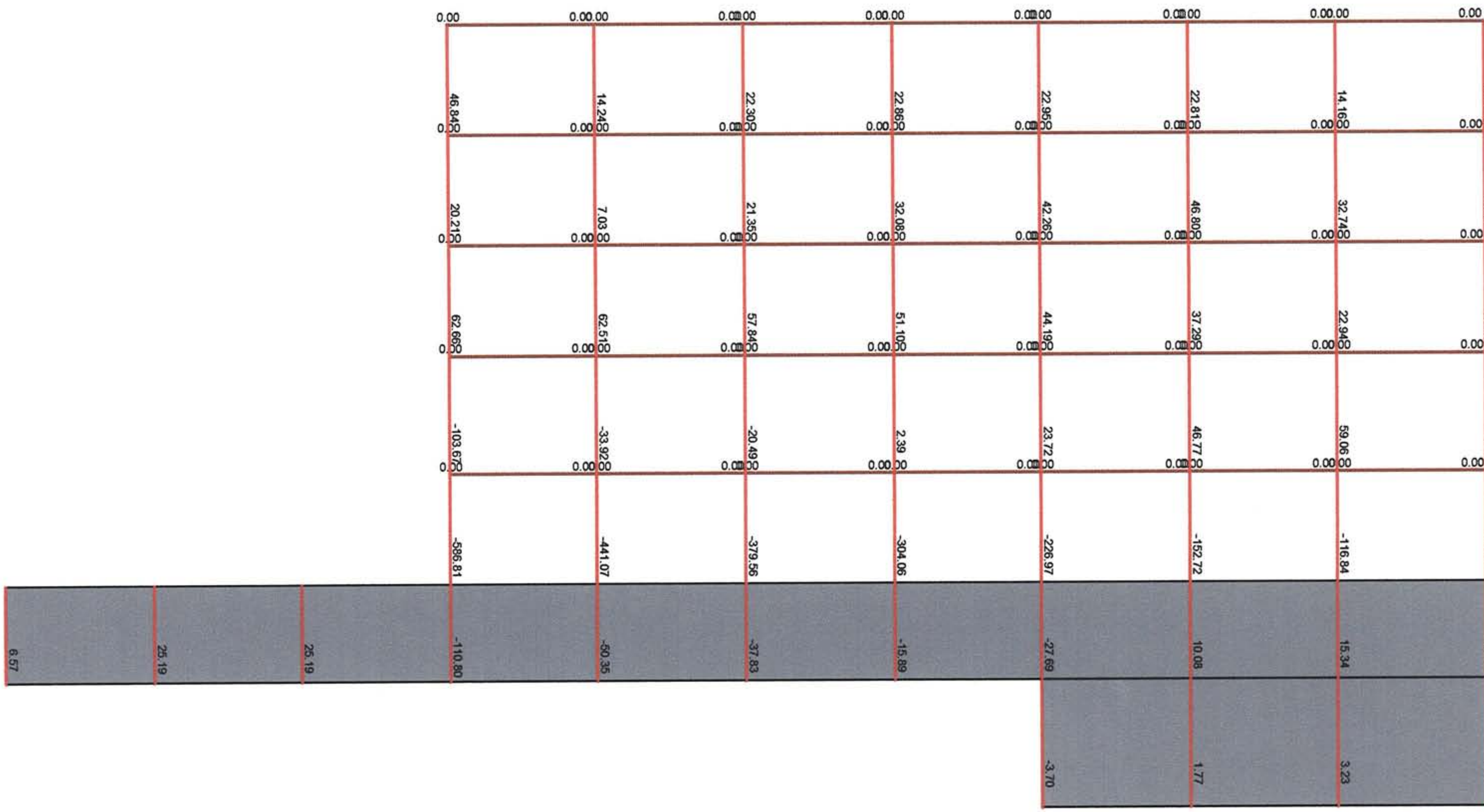
ember Force Envelope Axial Loads Min UF

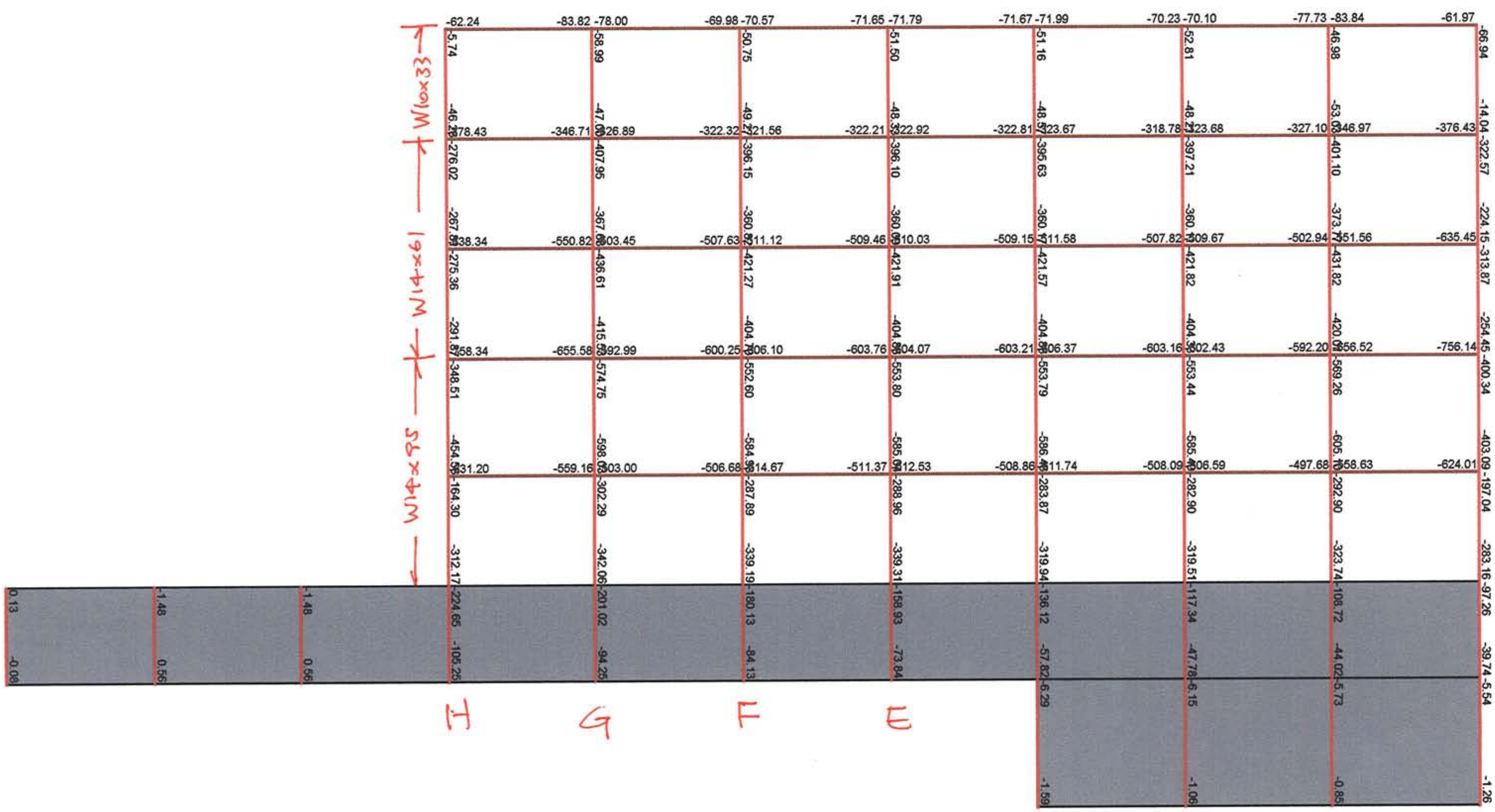


AM Frame V8.2 - Analysis Mode
ataBase: UUnursing
ember Force Envelope

02/02/05 14:14:16
Major Moment

Min

U_D



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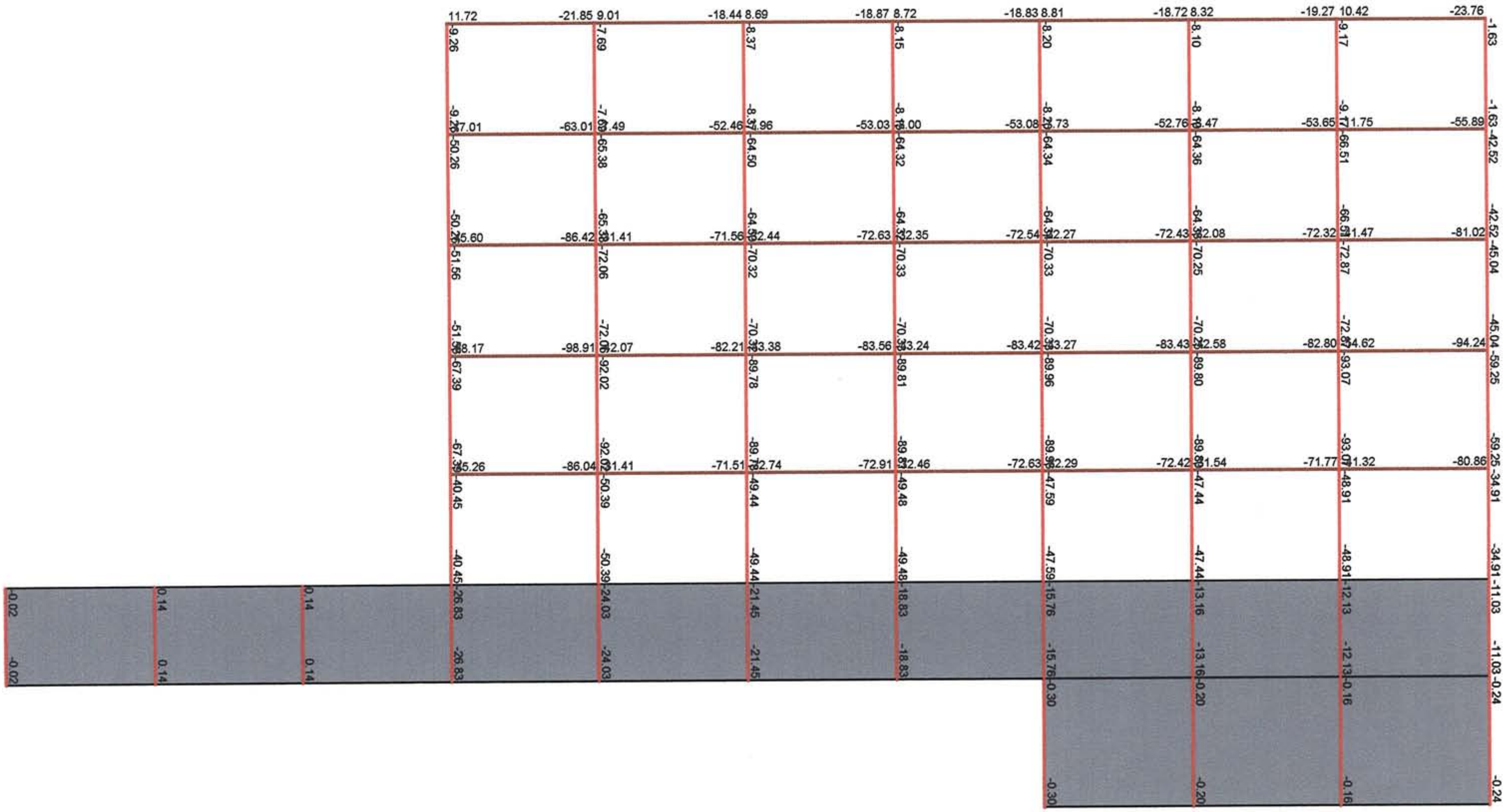
Uᴅ.



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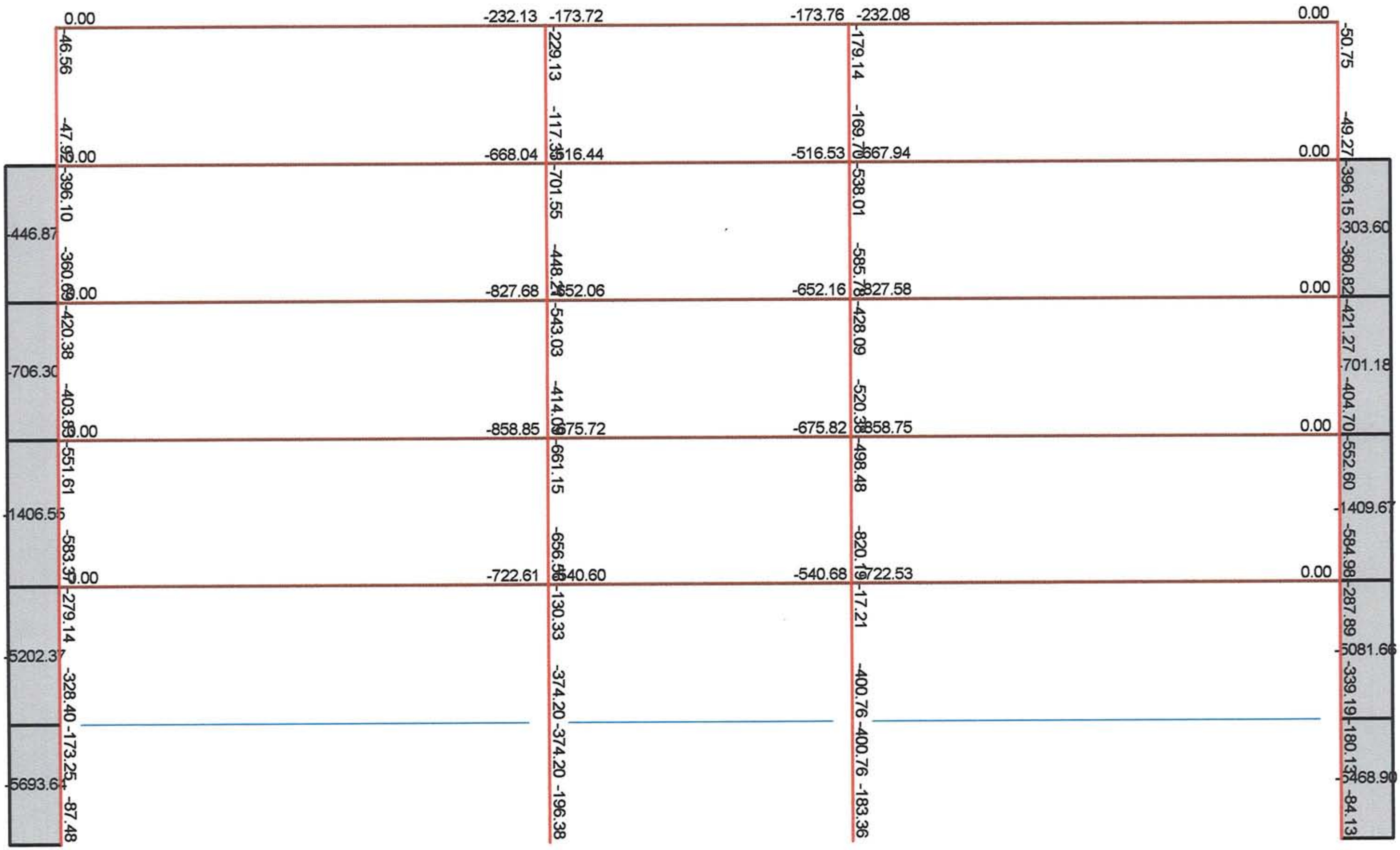
Uo



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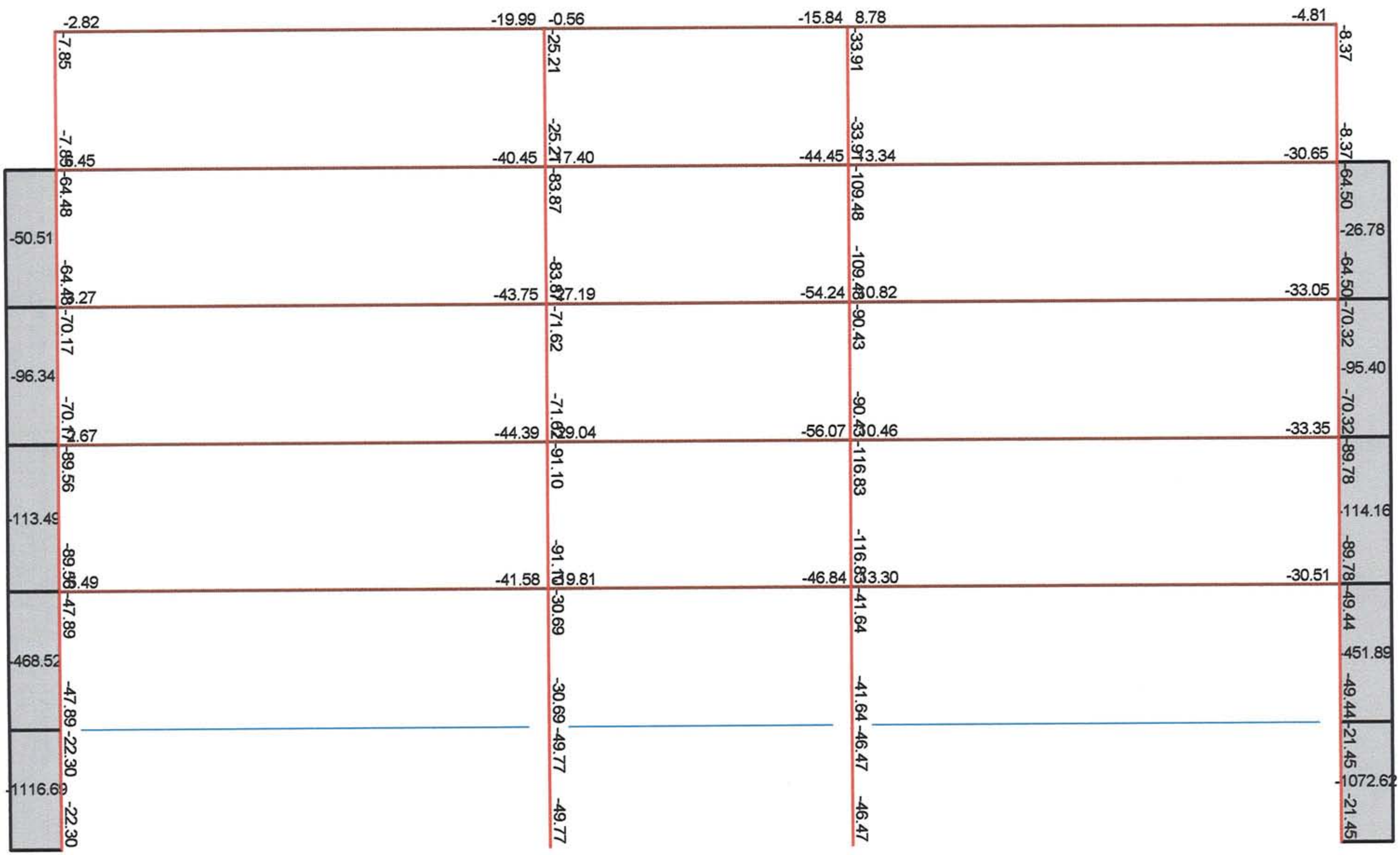

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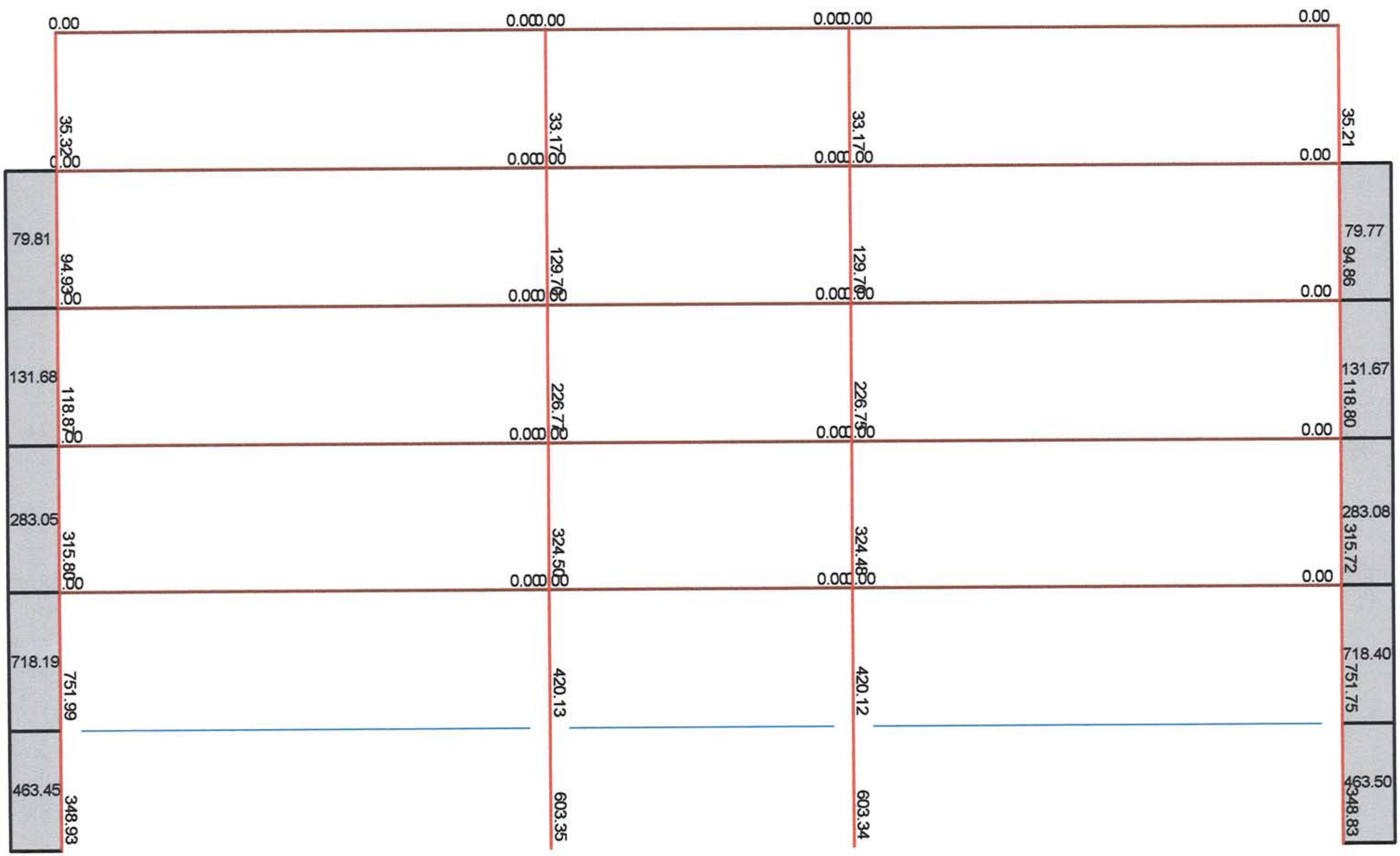
UF



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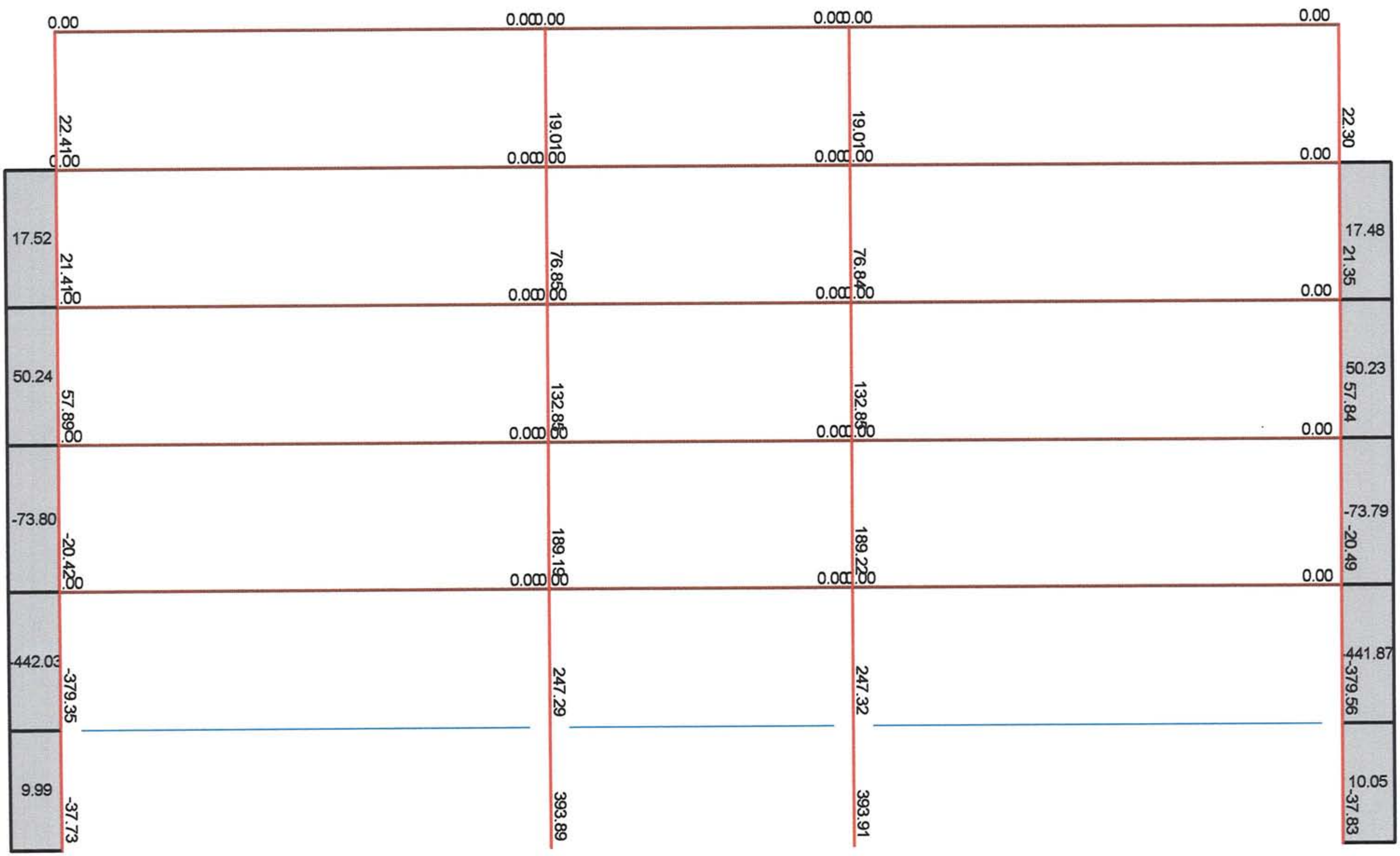

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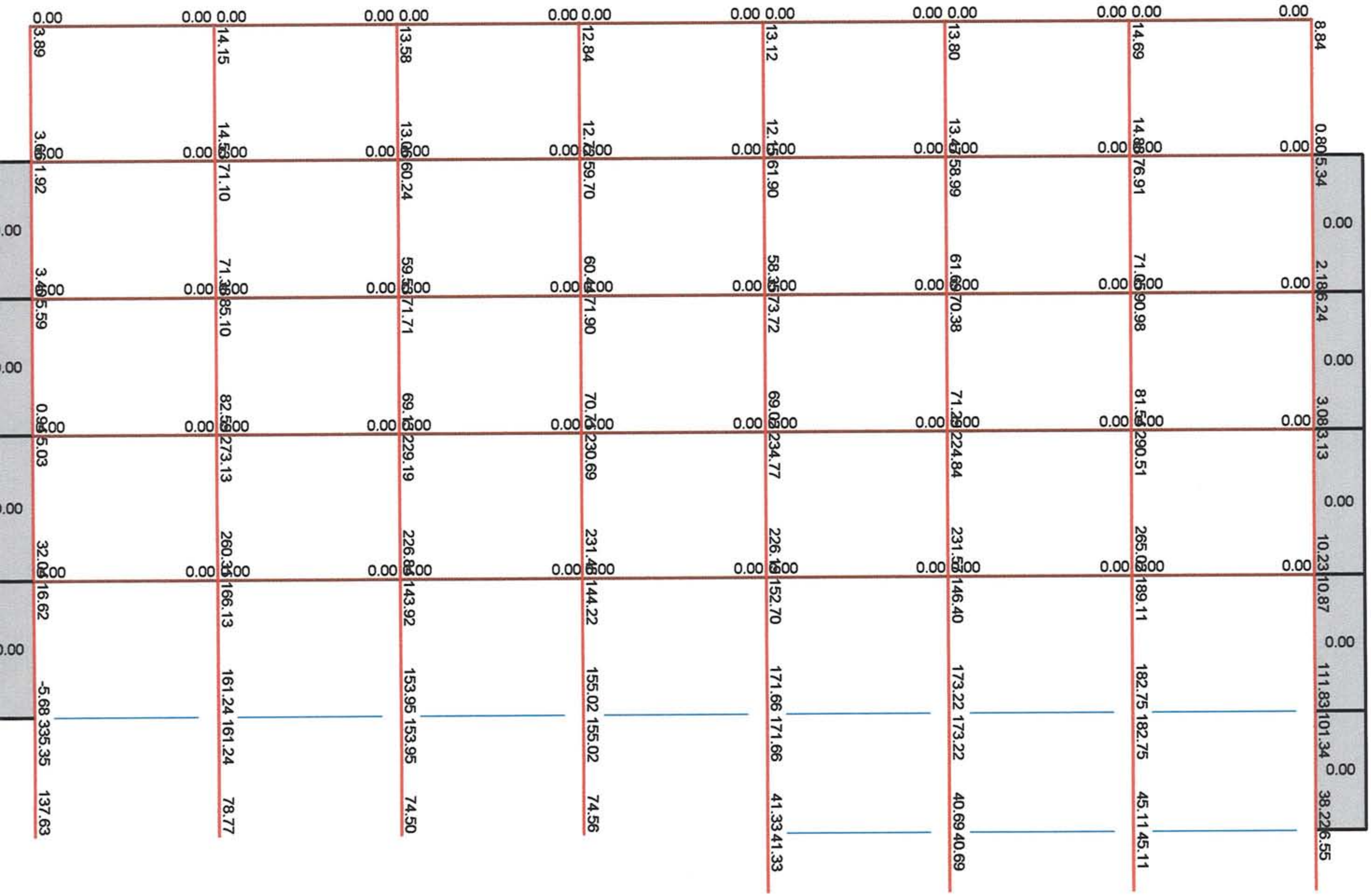
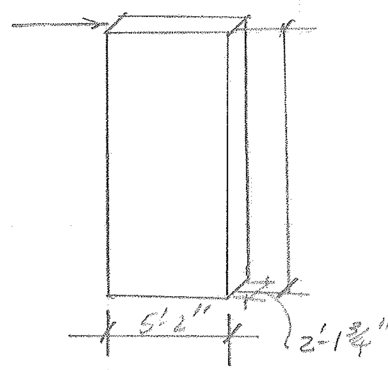


REAVELEY ENGINEERS & ASSOCIATES, INC.

project: UU College of Nursing
ajc architects
location: Salt Lake City, Utah
date: 2005 by: Fan Xiao
sheet:

Masonry shear pier

Size: 5'-2" × 2'-1 3/4" overall 54" × 16" net



Reinf: Vert. 6 #6
Horiz. 2 #8 weld to steel col at ea FL.

Max shear $V = 460$ kips (U_D)

$M = 2355$ kip ft. (U_D)

$A = 54 \times 16 = 864$ in^2

$m = 4$ for LS Reinf. Masonry Shear Wall Table 3-7

$v_j^{avg} = \frac{460}{864}(\frac{1}{4}) = 133$ psi > 70 psi

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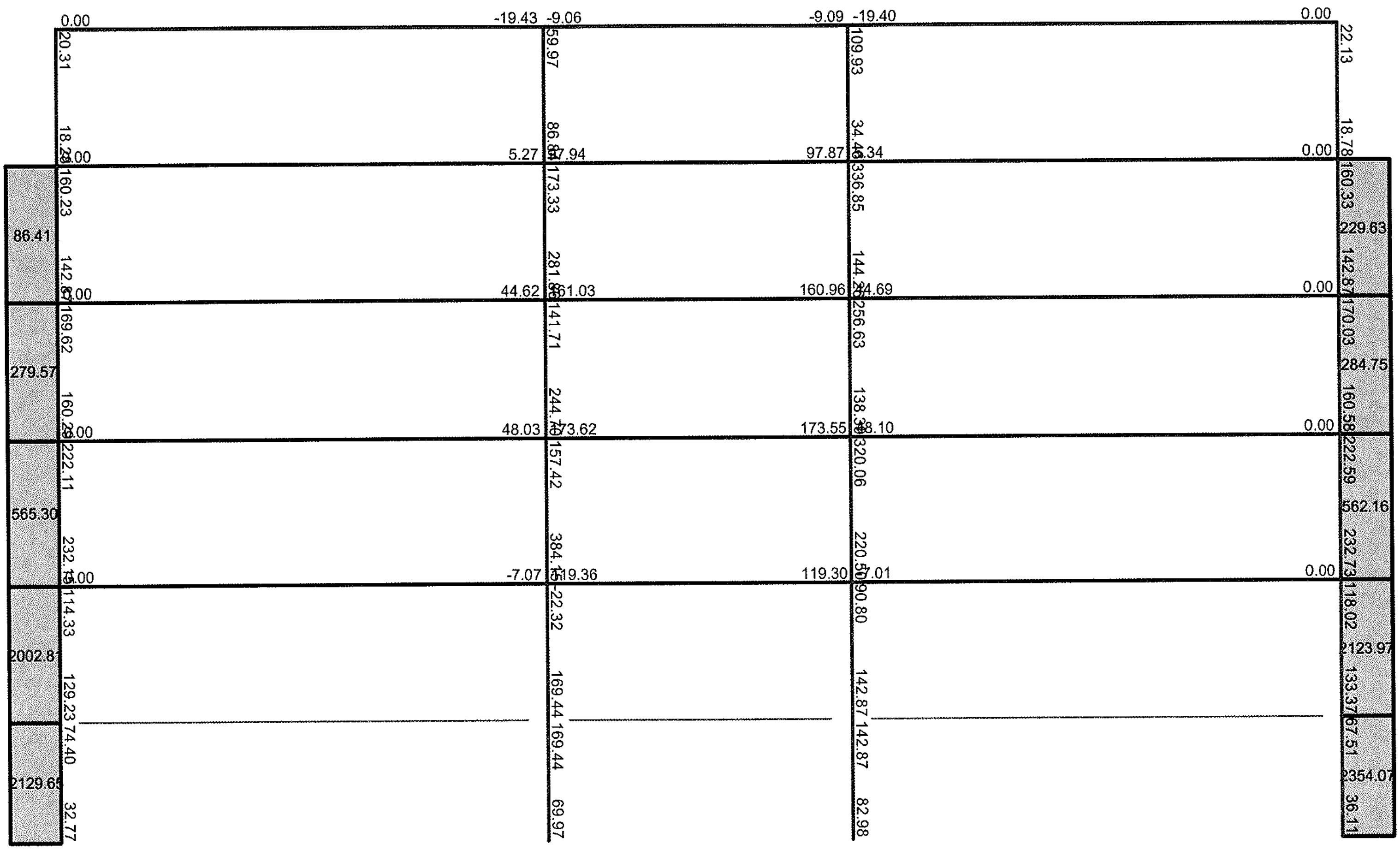
DataBase: UUnursing 02/15/05 16:45:57
Member Force Envelope Major Moment Max

UD



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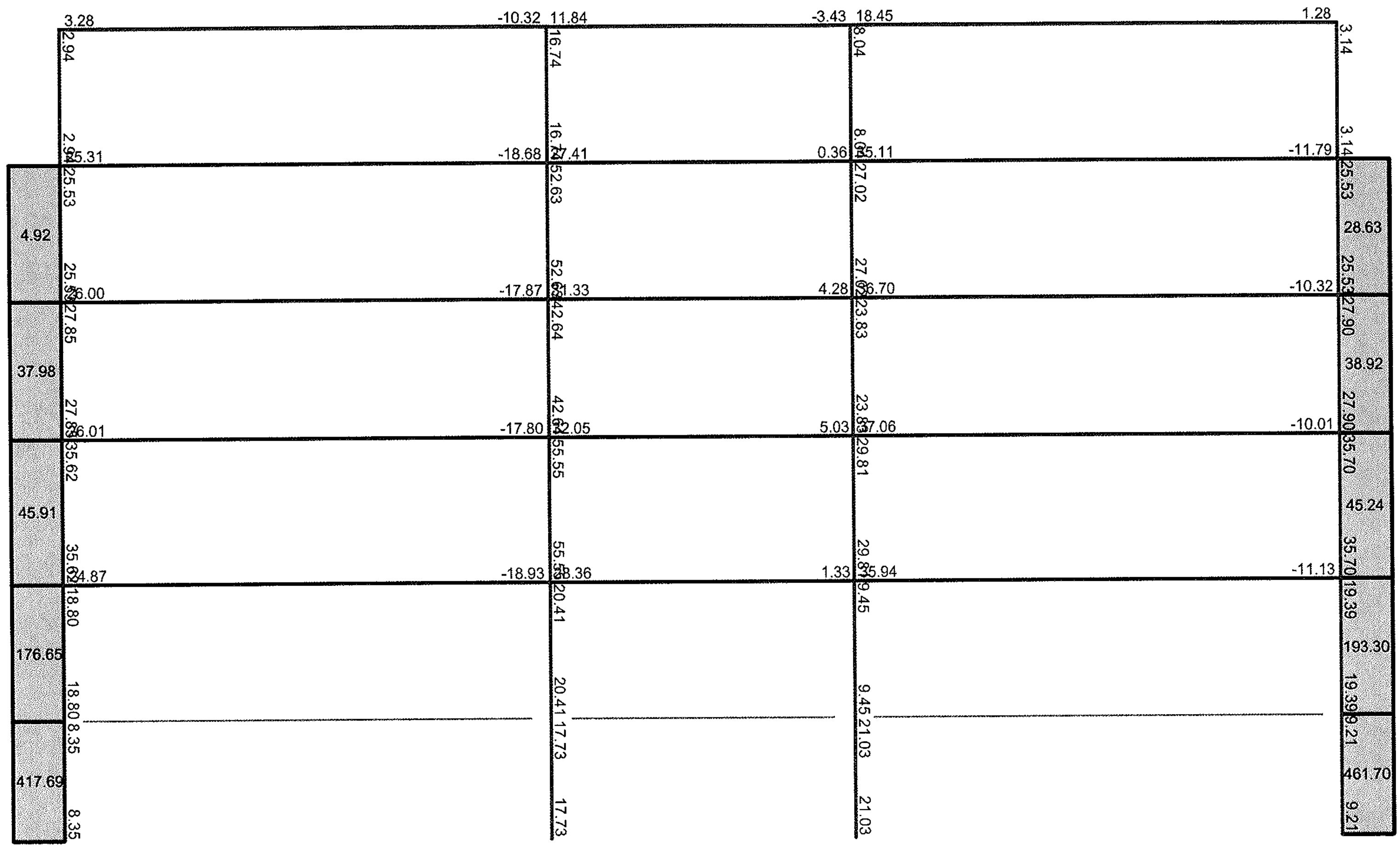
Uo



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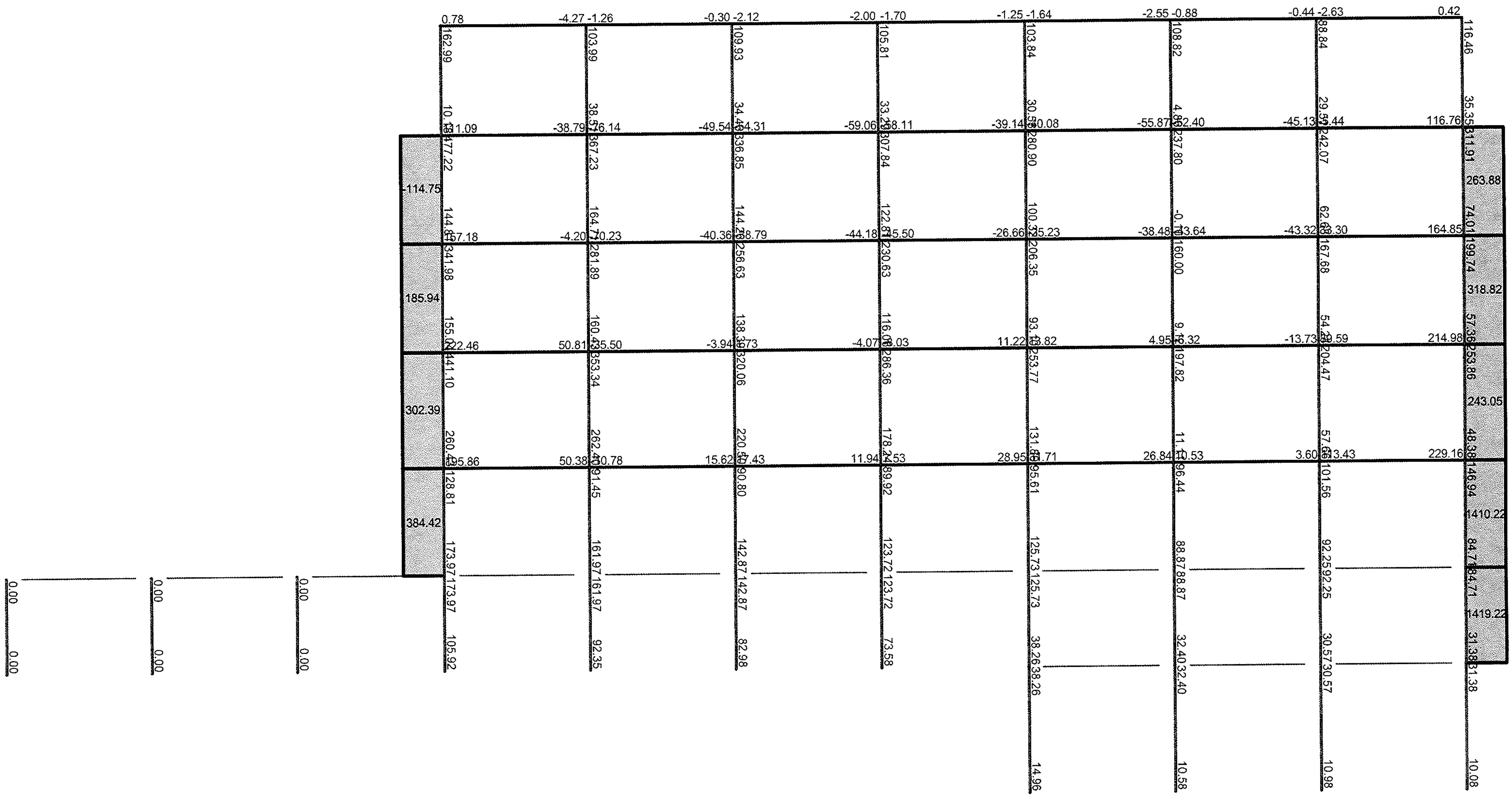
Member Force Envelope

02/15/05 16:45:57
Major Moment

Max



Ub

RAM Frame V9.0 - Analysis Mode
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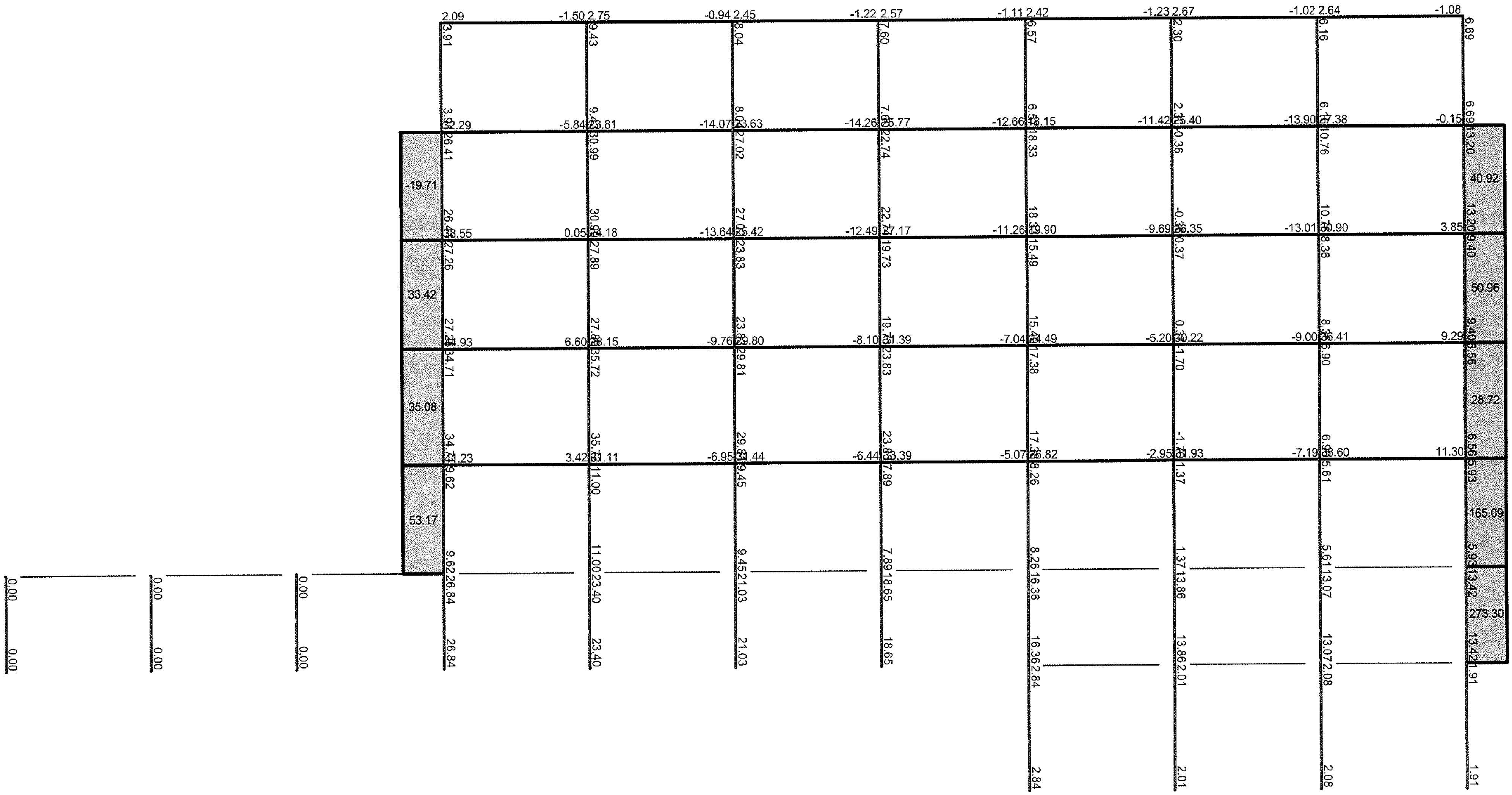
02/15/05 16:45:57
Major Shear

Max



Ub

Appendix C

A Comprehensive Asbestos Survey and Assessment
For the
University of Utah's College of Nursing
Building 588
University of Utah Campus
10 South 2000 East
Salt Lake City, Utah

April 17, 2008

Submitted To:

Mr. William Bowen
Program Manager
Division of Facilities Construction and Management
4130 State Office Building
Salt Lake City, Utah 84114

Prepared By:

IHI Environmental
640 E. Wilmington Avenue
Salt Lake City, Utah 84106
Phone: (801) 466-2223
Fax: (801) 466-9616

IHI Project No. 08A-1020

A Comprehensive Asbestos Survey and Assessment
for the
University of Utah's College of Nursing

Building 588
University of Utah Campus

10 South 2000 East
Salt Lake City, Utah

Executive Summary

A comprehensive asbestos survey and assessment for the University of Utah's College of Nursing was completed at the subject facility on March 19, 2008. Bulk samples were collected from suspect asbestos materials and analyzed to determine if they contained asbestos. Mr. William Bowen, State of Utah, Division of Facilities Construction & Management requested this asbestos survey.

All areas inside and outside the building, except the roofing materials, were inspected.

Amounts of ACMs identified in this survey and estimated removal costs for these materials by a certified asbestos abatement contractor are presented in the following Executive Summary table. The cost estimates in this table include only asbestos removal costs; abatement design and management fees are not included. The estimated removal cost for all of the ACMs in the building is **$1,486,008.**

The estimated removal and disposition costs for the uniform hazardous materials, when accomplished by a certified asbestos abatement contractor in conjunction with the asbestos abatement is **$13,059.**

There is important information contained in the body and appendices of this report that is not included in this executive summary. It is therefore recommended that this report be read in its entirety. Information specific to the asbestos regulatory requirements is provided in ¶ 5.1.

Executive Summary
Asbestos-containing Materials by Homogeneous
University of Utah College of Nursing
DFCM

Homogeneous Area Number	Material Description/Location	Asbestos Content	Amount	Cost Estimate (1)
M001	**Wall System w/multiple layers - Standard gypsum board wall system** Rooms and hallway areas throughout the facility except renovated areas	ND-2% Chrysotile Joint Comp. <1%	152,828 sq. ft.	$305,656
M007	**Ceiling Tile - 2' x 2' long, thin, deep worm and pin hole pattern, flush edge** Random rooms and hallway areas throughout the facility	<1 - 3% Chrysotile 1.5 - 2% Amosite	392 sq. ft.	$710
M008	**Floor Tile and Mastic on Cement - 9" tan, streaked, with black mastic** Level 1 hallway	8% Chrysotile Tile >1% Chrysotile Mastic	2,196 sq. ft.	$5,183
M008A	**Floor Tile and Mastic Under GDC - 9" tan, streaked, with black mastic** 12 rooms on Level 1	8% Chrysotile Tile >1% Chrysotile Mastic	1,975 sq. ft.	$7,564
M019	**Floor Tile and Mastic on Cement - 9" gray with white streaks and black** South stairwell landings from Level 1 to the Penthouse	1% Chrysotile Tile 1% Chrysotile Mastic	424 sq. ft.	$1,001
M021	**Floor Tile and Mastic on Cement - 12" rose marble tile with black mastic** Level 1 west hallway	ND Tile 6% Chrysotile Mastic	476 sq. ft.	$1,123
M022	**Floor Tile Mastic-Under GDC - Black** Two rooms on Level 1 and one room on Level 3	6% - 8% Chrysotile	1,976 sq. ft.	$4,446
M023	**Ceiling Tile - 2' x 4' long lateral worm and pin hole pattern, flush edge** 109 rooms and offices throughout the facility	ND - 3% Chrysotile ND - 3% Amosite	25,268 sq. ft.	$45,735
M028	**Fire Door - 9' wood door with white plaster core, labeled with no rating** Classroom 212, the north stairwell on all levels and 6 random rooms	5% Chrysotile 5% Amosite	13 units	$1,495

Homogeneous Area Number	Material Description/Location	Asbestos Content	Amount	Cost Estimate (1)
M030	**Floor Tile and Mastic on Cement - 12" light gray with rust streaks and black mastic** Random rooms on Levels 2 and 5, and throughout most of Level 4	>1% Chrysotile Tile >1% Chrysotile Mastic	5,231 sq. ft.	$12,345
M030A	**Floor Tile and Mastic Under GDC - 12" light gray with rust streaks and black mastic** Throughout much of Level 4	>1% Chrysotile Tile >1% Chrysotile Mastic	4,294 sq. ft.	$16,446
M033	**Light Fixture - Wire Insulation - Recessed light fixture wire insulation** Random locations throughout the facility	Assumed	10 units	$210
M035	**Vinyl Floor Sheeting - Thin, brittle gray mosaic pattern without backing** South stairwell hallway on Levels 3 and 5	3% Chrysotile Sheeting <1% T.C.F. Mastic	64 sq. ft.	$256
M035A	**Vinyl Floor Sheeting under Floor Sheeting - Thin, brittle gray mosaic pattern without backing** South stairwell hallway on Level 2	3% Chrysotile Sheeting <1% T.C.F. Mastic	176 sq. ft.	$792
M037	**Ceiling Tile - 2' x 2' long, real thin worm and pin hole pattern, flush edge** Hallways around the elevator lobbies and some offices on Levels 3 and 4	ND - 3% Chrysotile 2% Amosite	712 sq. ft.	$1,289
M038	**Floor Tile and Mastic on Cement - 12" beige marble with black mastic** Level 3 atrium and hallways and 26 offices	>1% Chrysotile Tile >1% Chrysotile Mastic	10,596 sq. ft.	$25,007
M038A	**Floor Tile and Mastic Under GDC - 12" beige marble with black mastic** Level 3, 8 offices and/or classrooms	>1% Chrysotile Tile >1% Chrysotile Mastic	4,594 sq. ft.	$17,595
M039	**Leveling Compound - Gray** Random locations throughout the facility	>1% Chrysotile		
M043	**Floor Tile and Mastic on Cement - 12" light tan with rust streaks and black mastic** Level 4, supply room 402, southwest	8% Chrysotile Tile >1% Chrysotile Mastic	15 sq. ft.	$35
M047	**Fire Door - 9' wood fire door, VT Industries, 1 hour rated** North stairwell on Level 5	Assumed	1 units	$115

Cost Area Number	Homogeneous Material Description/Location	Asbestos Content		Amount Estimate [1]
M054	**Ceiling Tile - All non-ACM ceiling tiles below ACM fireproofing** Some areas on all levels	**Contaminated**	30,370 sq. ft.	$54,970
S001	**Spray Structural Fireproofing - Light tan, medium soft** Throughout the facility except the west half of Level 5, 75% of Level 2 and some random locations on Levels 1, 3 and 4	3 - 6% Chrysotile	120,015 sq. ft.	$955,319
S004A	**Spray Structural Fireproofing - Soft, bluish gray** Level 5-atrium area and some rooms	ND - 15% Chrysotile	2,387 sq. ft.	$19,001
T001	**Pipe Fitting Insulation (inaccessible) - Cloth covered white plaster on fibrous glass insulated pipe runs** Random locations above ceilings on all levels	1.5% - 3% Chrysotile	145 units	$3,384
T002	**Pipe Fitting Insulation - Canvas covered white plaster on fibrous glass** Basement mechanical room	3% Chrysotile	68 units	$1,270
T003	**Pipe Fitting Insulation - Canvas covered white plaster on fibrous glass** Basement mechanical room	3% Chrysotile	100 units	$1,867
T004	**Tank Insulation - Cloth covered white plaster** Basement mechanical room, north area	15% Amosite	35 sq. ft.	$401
T005	**Pipe Insulation - Cloth covered pre-formed plaster** Basement mechanical room, both north and south areas	15% Chrysotile	200 ln. ft.	$2,234
T005A	**Pipe Fitting Insulation - Cloth covered white plaster** Basement mechanical room, north and south areas	2% Chrysotile	30 units	$560

Note 1: Cost Estimates include asbestos removal costs only; abatement design, management fees and replacement costs are not included. Please refer to Section 6.0 for more details.

Table of Contents

A Comprehensive Asbestos Survey and Assessment
for the
University of Utah's College of Nursing
Building 588
University of Utah Campus
10 South 2000 East
Salt Lake City, Utah

1.0 INTRODUCTION

A comprehensive asbestos survey and assessment for the University of Utah's College of Nursing was completed at the subject facility on March 19, 2008. The purpose of this survey was to identify the existence, extent, and condition of both friable and non-friable asbestos-containing materials (ACM). Bulk samples were collected from suspect materials and analyzed for asbestos content. Each occurrence of ACM was assessed for friability and condition.

The following accredited inspector performed the inspection, collected the samples, and made the assessments:

John C. Larson
State of Utah Asbestos Inspector
Certification No. ASB-0894

04/17/08
Date

This report was reviewed by:

Jon H. Self
Asbestos Program Manager

04/17/08
Date

2.0 BUILDING DESCRIPTION

Building Identification

Building Address ....10 South 2000 East, Salt Lake City, Utah

Building Construction

Building Construction Date .... Circa 1969
Building Type .... Education and Administration
Building Total Sq. Ft. .... Approximately 98,500 sq. ft.
Structural System .... Concrete, block and steel
Exterior Wall Construction .... Brick
Floor Deck Construction .... Concrete
Roof Deck Construction .... Concrete
Roof Construction .... Membrane roof

Floors

Floors Above Grade .... Five
Floors Below Grade .... Two

Interior Finishes

Floors .... Carpet, vinyl floor sheeting, vinyl floor tile, ceramic tile and concrete
Walls .... Gypsum board wall system, plaster, ceramic tile, concrete and block

Building Mechanical

Heating Plant .... Steam supply from external boiler

Main Heating Distribution: .... Ducted supply in ceilings

Cooling.. Chilled water system

Further, the NESHAP regulations state that any sample found to contain less than 10% asbestos but greater than “none detected," by visual estimation, must be assumed to contain greater than 1% asbestos unless confirmed to be 1.0% or less asbestos by point counting analysis. All samples found to contain asbestos in the range between greater than 1% and 10% by standard PLM analysis were assumed in this report to contain greater than 1% asbestos. For homogenous areas where all of the samples were reported as greater than None Detected but equal to or less than 1% asbestos, samples were point counted until one of the samples exceeded 1% or all were found to be 1% or less. In the case of layered samples, such as gypsum board wall systems and floor tile and mastic, where positive layers were detected, analysis results of the individual layers are evaluated and reported. The laboratory reports can be found in Appendix B of this report.

4.0 SURVEY RESULTS

4.1 Asbestos-Containing Materials

Homogeneous areas of suspect ACM are identified as being ACM if the laboratory analysis shows the material to contain any detectable asbestos, unless subsequent point count analysis resulted in 1.0% or less asbestos being detected. Table 1 in the Executive Summary and in Appendix A lists all homogeneous areas that were found to be ACM. Each material is described by type of material, friability and visual appearance.

Friability is defined in accordance with EPA’s NESHAP regulations.

> “Friable ACM” is any material containing more than 1% asbestos (as determined by PLM) that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure and also includes non-friable ACM that may become friable during building demolition.
>
> “Non-friable ACM” is any material containing more than 1% asbestos (as determined by PLM) that, when dry, <u>cannot</u> be crumbled, pulverized, or reduced to powder by hand pressure.
>
> “Category I non-friable ACM” are asbestos-containing resilient floor coverings (commonly known as vinyl asbestos tile (VAT)), asphalt roofing products, packings, and gaskets.
>
> “Category II non-friable ACM” encompasses all other non-friable ACM.

Note: In accordance with OSHA guidelines and IHI policy, when a layer within a gypsum board wall system tests positive for asbestos, that layer is evaluated independently from the rest of the sample. Consequently, a sample of gypsum board wall system with asbestos only in the joint compound layer would likely be analyzed as a non-ACM using EPA-recommended composite analysis and be analyzed as an ACM (or containing measurable asbestos capable of producing airborne asbestos concentrations greater than the OSHA Permissible Exposure Level) following OSHA guidelines because the asbestos layer is evaluated independently. Please see Section 5 of this report for further discussion of this matter.

4.2 Non-Asbestos-Containing Materials

Homogeneous areas of suspect ACM are identified as ***non***-ACM if the laboratory analysis shows the material to contain asbestos in concentrations between None Detected up to and including 1%. Where results of the initial PLM analysis were in the range between above None Detected up to and including 1%, point counting was used to confirm that asbestos concentrations did not exceed 1%. Table 2, located in Appendix A of this report, lists all homogeneous areas that were found to be non-ACM.

4.3 Bulk Sample Analytical Results

Table 3, located in Appendix A of this report, lists all of the bulk samples (in order by sample number) that were collected from homogeneous areas of suspect ACM, along with the laboratory analytical results. Each sample was given a unique sample number. There may be more than one sample number for the same homogeneous area of suspect ACM. The homogeneous areas of suspect ACM are identified in this table under the EPA AHERA material categories of Miscellaneous (M-##), Thermal System Insulation (T-##), and Surfacing (S##) with sequential homogeneous area numbers being assigned within each category. The sample locations listed on this table provide brief, but specific, descriptions of the locations where each of the samples was collected. This is different from the homogeneous area locations provided in Tables 1 and 2 that describe all of the locations where that homogeneous area material are located. Table 4 is the same as Table 3 except that the entries have been sorted by homogeneous area number.

4.4 Damage and Hazard Assessment

Each homogeneous area of ACM has been assessed for existing damage, accessibility, and potential for future damage, and this information is presented in Table 5, located in Appendix A of this report. This table also lists the substrate present beneath each homogeneous area of ACM.

Each homogeneous area of ACM and asbestos-containing building material (ACBM) was classified into one of the following seven categories, as specified in EPA's AHERA regulations (40 CFR §763.88):

(1) Damaged or significantly damaged thermal system insulation ACM.
(2) Damaged friable surfacing ACM.
(3) Significantly damaged friable surfacing ACM.
(4) Damaged or significantly damaged friable miscellaneous ACM.
(5) ACBM with potential for damage.
(6) ACBM with potential for significant damage.
(7) Any remaining friable ACBM or friable suspected ACBM.
(X) Not applicable (material is non-friable).

The damage categories are defined as follows:

3.0 SURVEY PROCEDURES

3.1 Building Survey

All accessible areas of the facility except the roof were visually inspected to identify suspect asbestos containing materials (ACM.) All accessible surfaces, structures, and mechanical systems within these areas were examined and all suspected ACM was touched to determine friability.

Suspect ACM was identified and assessed in homogeneous areas. A homogeneous area is defined as a single material, uniform in texture and appearance, installed at one time, and unlikely to consist of more than one type, or formulation, of material. In cases where joint compound and/or tape has been applied to wallboard (gypsum board) and cannot be visually distinguished from the wallboard, it is considered an integral part of the wallboard and in effect becomes one material forming a wall or ceiling “system."

Each homogeneous area was given a unique material identification number. Each ID number begins with a letter: "S" for surfacing materials, "T" for thermal system insulation, or "M" for miscellaneous materials. This letter is followed by a three-digit number, assigned in consecutive order. This number is used to identify the homogeneous area throughout the inspection report.

3.2 Bulk Sample Collection

Bulk samples were collected from all accessible homogeneous areas of suspect ACM for subsequent laboratory analysis to determine actual asbestos content.

The number of samples collected from each homogeneous area generally followed the EPA AHERA regulations (40 CFR §763.86). Friable surfacing materials were sampled using the random sampling scheme given in the EPA publication 560/5-85-030a, titled "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials."

3.3 Bulk Sample Analysis

Bulk samples were analyzed using polarized light microscopy (PLM) and visual estimation in accordance with the EPA Interim Method for the Determination of Asbestos in Bulk Insulation Samples, EPA-600/M4-82-020. Samples were analyzed by Dixon Information Inc., 78 West 2400 South, Salt Lake City, Utah 84115. The laboratory is accredited under the National Institute of Standards and Technology - National Voluntary Laboratory Accreditation Program (NIST-NVLAP) for bulk-asbestos sample analysis and is also accredited by the American Industrial Hygiene Association (AIHA.)

Federal EPA’s NESHAP and AHERA regulations as well as OSHA define ACM as material containing greater than 1% asbestos by weight. Materials containing 1% or less asbestos are not considered regulated ACM by EPA; however, materials containing any detectable level of asbestos may be regulated to some degree by OSHA.

"Undamaged" means the material had no visible damage, or extremely minor damage or surface marring (i.e., a room full of floor tile with only two or three small corners chipped off of the tile).

"Slight Damage" means the material had visible damage evenly distributed over less than 10% of its surface, or localized over less than 25% of its surface.

"Significantly Damaged" means the material had visible damage that is evenly distributed over 10% or more of its surface, or localized over 25% or more of its surface.

Each homogeneous area of ACM was evaluated for accessibility to the building occupants and the general public, assuming the building was fully occupied, using the following assessment categories.

“Inaccessible” means the material was located in an area that people had no reason to enter and could not access without special measures. One example would be above a solid ceiling.

“Rarely Accessed” identifies a material that was in a location that could be accessed but wasn't unless there was a specific need. An example would be a pipe tunnel. Another example would be a high ceiling that is out of reach and not subject to any specific disturbances.

“Periodic Access” identifies a material that was in a location that was accessible, was not occupied full time, but was accessed on a routine basis. An example would be a mechanical room or boiler room.

“Continuous Access” identifies a material that was in a location that was occupied full time and was within reach of the occupants, or was frequently subject to direct disturbance. Examples would be exposed floor tile or a normal height ceiling.

4.5 Homogeneous Areas with Special Considerations

M003A - Gypsum board wall system. Under the EPA composite sample procedure the “overall” wall system asbestos concentration was less than 1% chrysotile by Mathematical Determination. However, the joint compound layer was determined to contain from None Detected to 2% chrysotile asbestos, and disturbance of this material is therefore an OSHA Class II operation. See ¶ 5.1 for further discussion of this issue.

M039 – Floor leveling compound. This material was determined to be >1% chrysotile asbestos. The material was layered with ACM black floor mastic. Quantification cannot be determined until floor coverings are removed. It is recommended that additional sampling be accomplished during abatement activities.

4.6 Assumed Asbestos-Containing Materials

M033 - Light fixture wire insulation. This material was not sampled for safety reasons, but has been known to contain up to 65% chrysotile asbestos and is easily identified by sight.

M049 – Fire door. The VT Industries 9', 1hour rated fire door on the 5th level, north stairwell could not be sampled without damage.

4.7 Inaccessible Areas

Ceiling space above hard ceilings and wall cavities are inaccessible for inspection. These areas could contain thermal system insulation as part of the HVAC system that has not been identified during the survey.

4.8 Material(s) assumed to contain >1.0% asbestos without subsequent TEM or Point Count Analysis

All materials fall into this category except homogeneous areas S004A - spray structural fireproofing, T004 - tank insulation and T005 - pipe insulation.

5.0 Response Action Comments

5.1 Asbestos Regulatory Requirements

Asbestos is a naturally occurring fibrous mineral that was used extensively in building materials in the United States primarily between 1930 and 1980. Inhalation of asbestos fibers, which are very respirable and resistant to physical and chemical breakdown, has been identified as a cause of several life-threatening diseases. Both the Environmental Protection Agency (EPA)[1] and Occupational Safety and Health Administration (OSHA)[2] have classified asbestos as a hazardous air pollutant and promulgated regulations on how it must be evaluated, handled, and removed. There are also state and local regulations that regulate asbestos.

In Utah, EPA asbestos regulations are administered by the Utah Division of Air Quality (DAQ)[3], which also has its own set of state asbestos regulations. OSHA asbestos regulations are administered by the Utah Occupational Safety and Health Administration

[1] 40 CFR Part 61, National Emissions Standards for Hazardous Air Pollutants (NESHAP) Subpart M, National emission Standard for Asbestos Toxic Substances Control Act, Subchapter II (TSCA Title II).
40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act (AHERA) – Asbestos-containing Materials in Schools, including Appendices (See www.epa.gov).

[2] 29 CFR 1926.1101, OSHA Construction Industry Regulations, Asbestos 29 CFR 1910.1001, OSHA Standards for General Industry, Asbestos. ***Note:*** OSHA has also promulgated a number of "letters of interpretation," which are very pertinent to how asbestos in low concentrations must be treated (See www.osha.gov).

[3] R307-801. Asbestos, Utah Division of Air Quality Rules, Implementation of Toxic Substances Control Act Title II, Asbestos Certification, Asbestos Training, notifications and Asbestos Work Practices for Renovations and Demolitions (See www.airquality.utah.gov).

(UOSH)[4], which has adopted the Federal OSHA regulations. All of these regulations require asbestos inspections of buildings, or potentially impacted areas of buildings, by DAQ-certified asbestos inspectors before buildings can be remodeled and/or demolished. The Salt Lake Valley Health Department (SLVHD) also has asbestos regulations covering Salt Lake County buildings scheduled for demolition.[5] The SLVHD asbestos regulations for pre-demolition building inspections follow DAQ asbestos guidelines but require that the inspector also be certified by the SLVHD.

Several factors determine how asbestos in a building must be treated prior to the renovation or demolition of that portion of the building where the asbestos is located. These factors and pertinent considerations from both an EPA and OSHA perspective include the following:

Factor	EPA Regulations for Asbestos Removal	OSHA Regulations for Asbestos Removal
Definition of asbestos in a building material	Defines an asbestos-containing material (ACM) as one containing >1% asbestos.	Defines an asbestos-containing material (ACM) as one containing >1% asbestos.
Regulation of asbestos in building materials	Regulates only ACMs. If the asbestos concentration in a material is shown to be "none detected" by initial analysis or 1% or less by point count analysis, EPA/DAQ does not regulate it.	Regulates not only ACMs but all materials containing any amount of asbestos. ***Note:*** Regulations are not as stringent for materials containing equal to or less than 1% asbestos but greater than a "none detected" concentration.
Determination of asbestos concentration in a gypsum board wall system	Allows compositing of all layers (joint compound, joint tape, and gypsum board) into one sample, which decreases the possibility that the sample will be evaluated as an ACM.	Requires that each layer of the wall system be analyzed and reported independently, which increases the possibility of a sample containing ACM or identifiable asbestos.
Defines regulated and non-regulated asbestos-containing material	Yes – Regulated ACMs include friable ACMs and resilient flooring, asphalt roofing, gaskets and packing that have become friable and other ACMs that have a high probability of becoming friable.	No – Requirements for asbestos work procedures and worker training are less stringent for resilient flooring, asphalt roofing materials, and materials containing greater than "none detected" but not greater than 1% asbestos.

[4] Asbestos, Tremolite, Anthophyllite, and Actinolite Standards, Chapter D (Construction), Section 58; and Chapter Z (General Industry), Section 1001, Utah Occupational Safety and Health Rules and Regulations (Administered by Utah Occupational Safety and Health Division) (See www.uosh.utah.gov).
[5] Salt Lake City – County Health Department, Health Regulation #1 Section 12 (See www.slvhealth.org).

Notification of asbestos abatement or building demolition required	Yes – Utah DAQ must be notified on the appropriate form 10 working-days prior to an asbestos abatement of regulated asbestos material greater than the NESHAP amount with demolition, or demolition where abatement is not required.	No – Not required.
Provision for allowing ACMs to remain in a building during a demolition.	Yes – Allows ACM resilient flooring, asphalt roofing, and certain other non-friable building materials in good condition to remain in a building during demolition as long as the demolition process will not render them friable.	No – If any asbestos is left in a building during a demolition, the demolition workers are expected to meet the same OSHA requirements that an abatement contractor would meet if an abatement contractor was conducting an abatement of those materials.

The IHI inspector who conducted this survey followed the EPA sampling guidelines that are recognized by both EPA and OSHA and collected samples in a manner that would allow evaluation of the results in terms of both EPA and OSHA compliance. As indicated in the table above, strict compliance with the OSHA regulations will typically involve abatement of some materials that could be completely ignored under EPA regulations.

This report provides pertinent information and cost estimates for full compliance with both the EPA and OSHA regulations. We would be happy to provide specific references regarding this matter and discuss other possible options.

5.2 Renovation Options

A listing of asbestos-containing materials found during this survey is presented in the Executive Summary presented in the front of this report, and in Appendix A, Table 1.

The spray structural fireproofing, pipe insulation, pipe fitting insulation, tank insulation and ceiling tile material in this facility are classified as friable ACMs. The other ACMs in the building are not currently classified as friable; however, renovations or demolition of these materials may cause them to become friable. NESHAP regulations require the removal of friable ACM and non-friable ACM that could become friable during renovation or demolition activities. Therefore, we recommend that all of the ACMs in this building be removed and properly disposed of by a licensed asbestos abatement contractor before renovation or demolition activities begin which have the potential of disturbing areas where these materials are located. While this recommendation may be overly conservative from an EPA perspective, it conforms to the OSHA Construction Industry Asbestos Standard (29 CFR 1926.1101) and will help protect workers on the site from potential asbestos exposure and the Owner from liability exposure.

6.0 COST ESTIMATES

A breakdown of the estimated removal costs by homogeneous area can be found in the Table 6, Appendix A. These cost estimates are provided for use in long-term budgeting and planning only, and do not have a level of accuracy sufficient to be used as a construction design cost estimate. The actual cost of asbestos removal is highly dependent on a number of factors such as the size of the job, the required time frame for removal, the time of year the job is conducted, the regulatory climate at the time, etc., therefore, actual abatement costs could vary significantly from these estimates. Replacement costs have not been included in these figures.

The cost for abatement design and management services is not included in these figures. These additional fees can range from 15% of the estimated abatement costs for large projects to greater than 50% for very small projects. The design and management fees cover the cost of preparing plans and specifications, conducting the bidding process as well as third-party oversight during abatement.

7.0 LIMITATIONS AND EXCLUSION OF WARRANTY

This asbestos survey and assessment was performed using procedures and a level of diligence typically exercised by professional consultants performing similar services. However, asbestos-containing material (ACM) can be present in a structure, but not identified using ordinary investigative procedures.

No asbestos survey can completely eliminate uncertainty regarding the presence of ACM. IHI’s level of diligence and investigative procedures are intended to reduce, but not eliminate, potential uncertainty regarding the presence of ACM. The procedures used for this survey attempt to establish a balance between the competing goals of limiting investigative costs, time, and building damage, and reducing the uncertainty about unknown conditions. Therefore, the determinations in this report should not be construed as a guarantee that all ACM present in the subject property has been included in this report.

This report presents IHI’s professional determinations, which are dependent upon information obtained during performance of consulting services. IHI assumes no responsibility for omissions or errors resulting from inaccurate information provided by sources outside of IHI.

No warranty or guarantee, expressed or implied, is made regarding the findings, conclusions, or recommendations contained in this report. The limitations presented above supersede the requirements or provisions of all other contracts or scopes of work, implied or otherwise, except those stated or acknowledged herein.

Appendix D

Building Floor Plans

Asbestos Material Survey : Basement Level

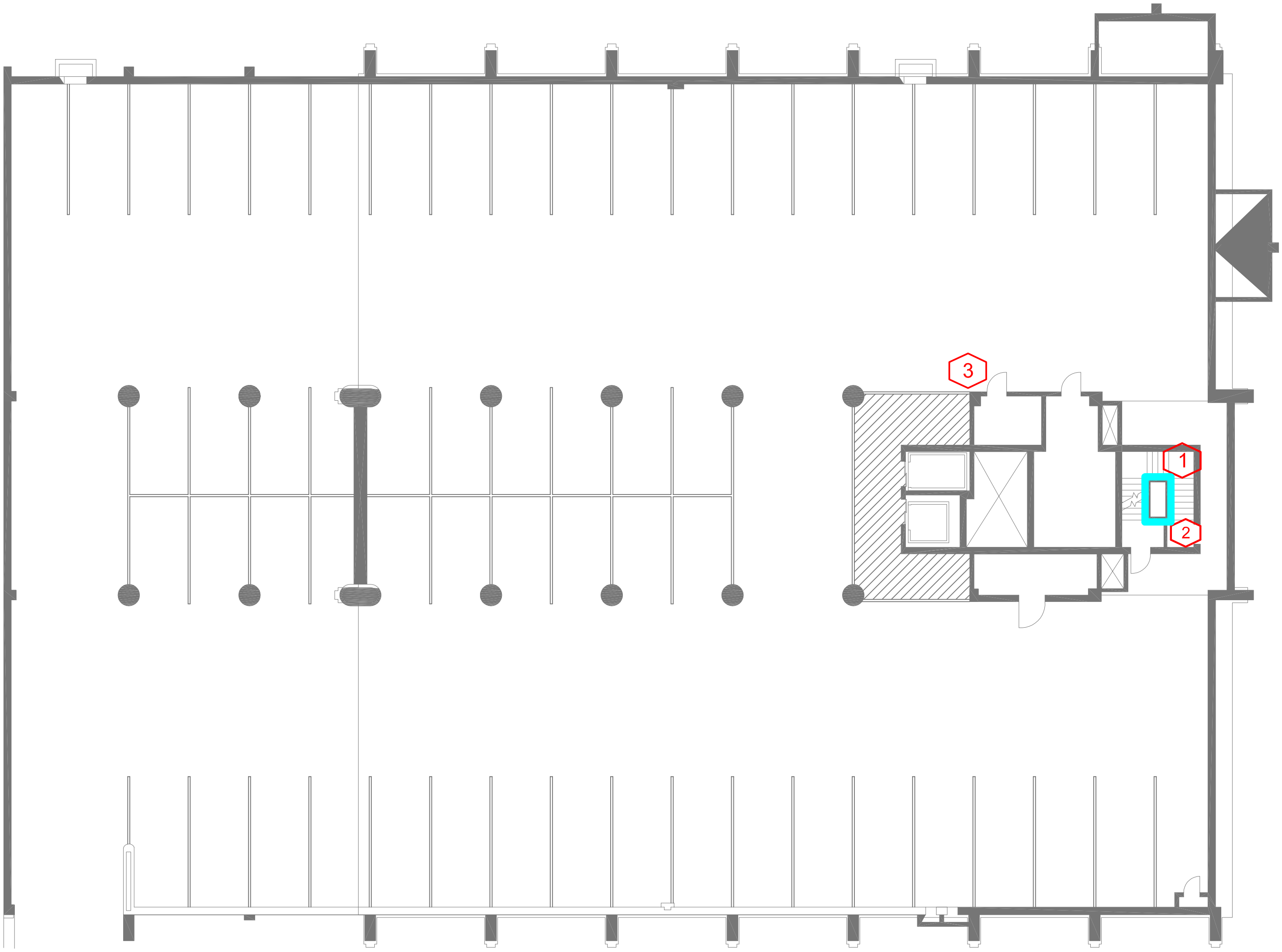
Explanation

#	Sample Location and Number
#	Number of Pipe Fittings With Asbestos-containing Insulation
	Asbestos-containing Pipe Insulation
	Asbestos-containing Tank Insulation

N

CLIENT INFO.		
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.: 08A-1020 CAD No.: 08A1020A-1 DRAWN BY: S. Rahman DATE: 4/14/08 REVISED BY: DATE:

Asbestos Material Survey : Lower Level Parking



Explanation

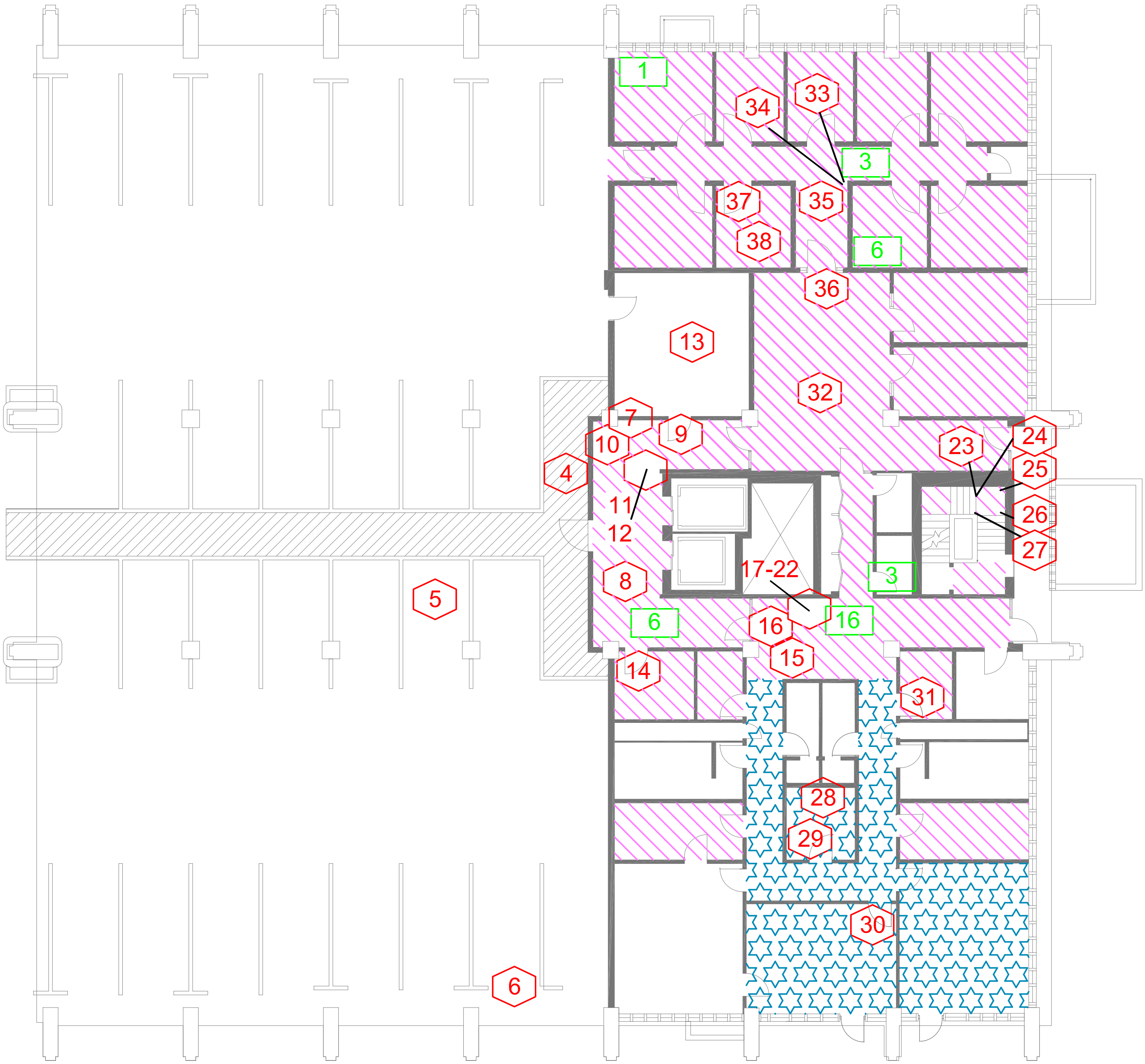
Sample Location and Number

Asbestos-containing Wall Board Joint Compound

N

CLIENT INFO.		
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.: 08A-1020 CAD No.: 08A1020B-1 DRAWN BY: S. Rahman DATE: 4/14/08 REVISED BY: DATE:

Asbestos Material Survey : First Level



Explanation

- # — Sample Location and Number
- # — Number of Pipe Fittings With Asbestos-containing Insulation
- Asbestos-containing Mastic Only
- Asbestos-containing Floor Tile and Mastic

N

CLIENT INFO. University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.:	08A-1020
		CAD No.:	08A1020C-1
		DRAWN BY:	S. Rahman
		DATE:	4/14/08
		REVISED BY:	
		DATE:	

Asbestos Material Survey : First Level (Ceiling Plan)

Explanation

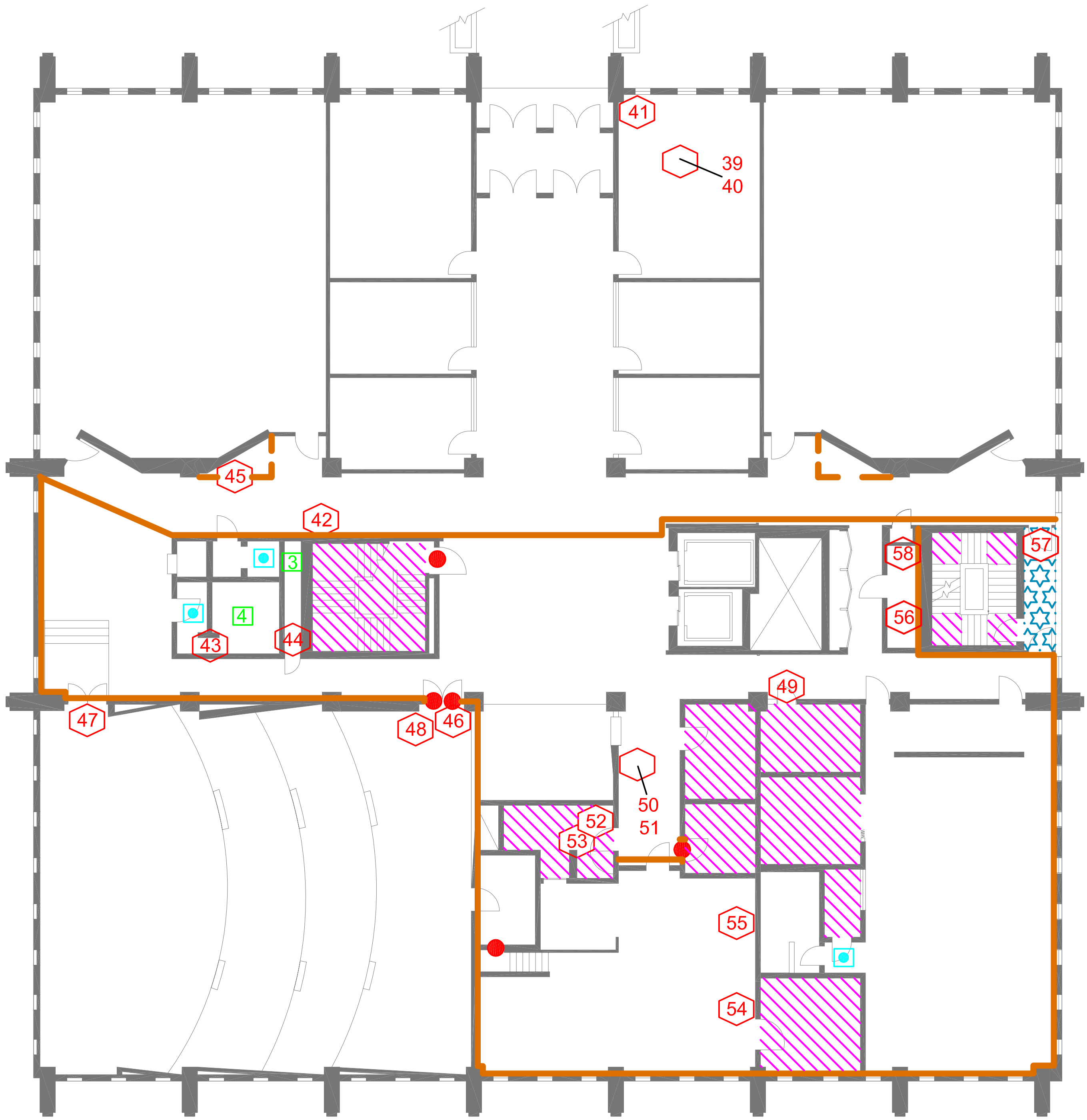
Asbestos-containing Ceiling Tiles

Asbestos-containing Fire Proofing

Note: Non-asbestos-containing Ceiling Tiles Are Contaminated With Asbestos-containing Fire Proofing Where It Exists

CLIENT INFO.			
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	PROJECT No.:	08A-1020
		CAD No.:	08A1020C-2
		DRAWN BY:	S. Rahman
		DATE:	4/14/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Asbestos Material Survey : Second Level



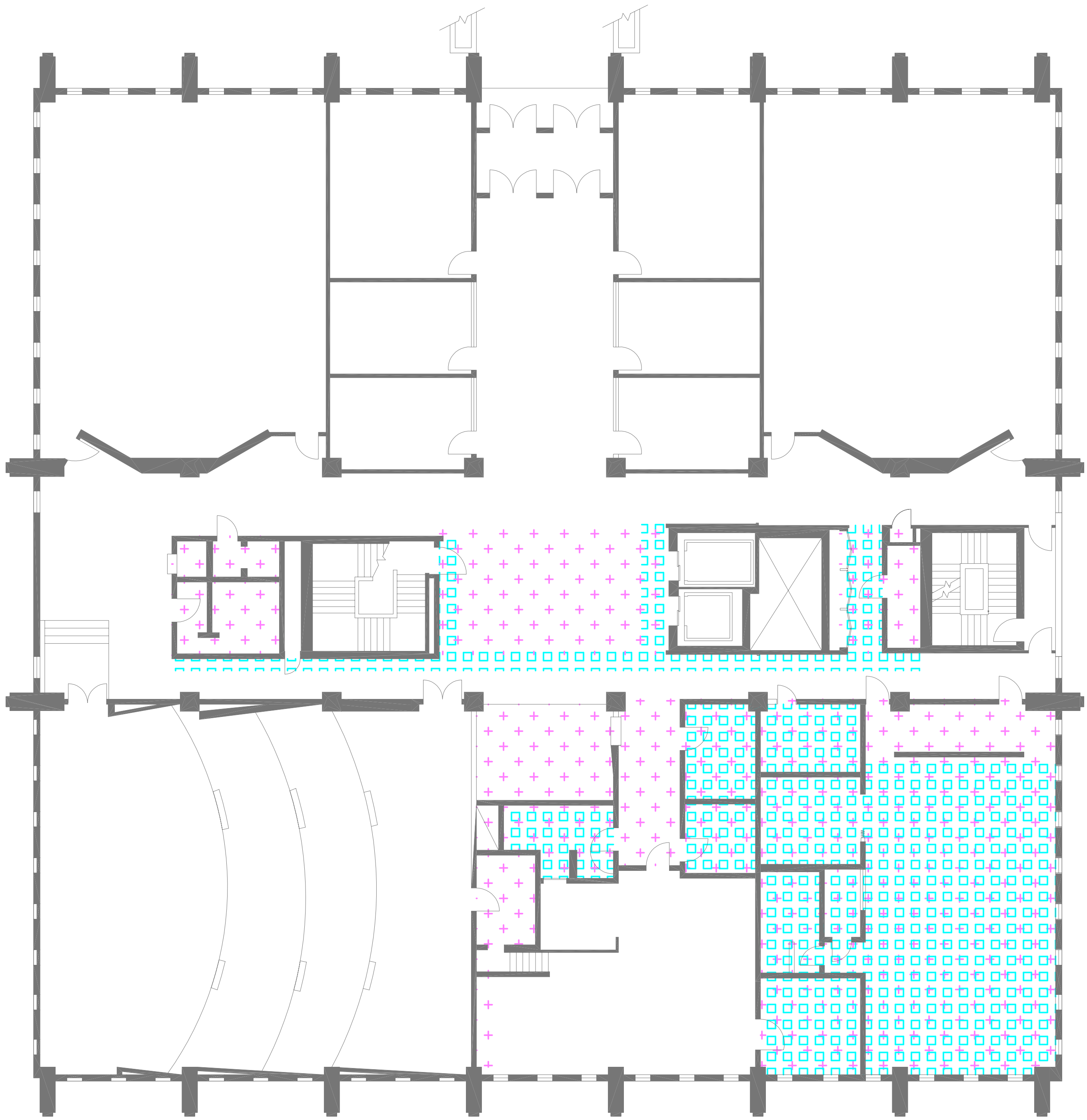
Explanation

- # — Sample Location and Number
- # — Number of Pipe Fittings With Asbestos-containing Insulation
- Light Fixture With Asbestos-containing Wire Insulation
- Asbestos-containing Floor Tile and Mastic
- Asbestos-containing Floor Tile Only
- Asbestos-containing Fire Doors
- Asbestos-containing Wall Board Joint Compound Throughout Outlined Area

N

CLIENT INFO.	IHI ENVIRONMENTAL	PROJECT No.: 08A-1020
University of Utah College of Nursing Salt Lake City, Utah	Approximate Scale 20 ft	CAD No.: 08A1020D-1 DRAWN BY: S. Rahman DATE: 4/15/08 REVISED BY: DATE:

Asbestos Material Survey : Second Level (Ceiling Plan)



Explanation

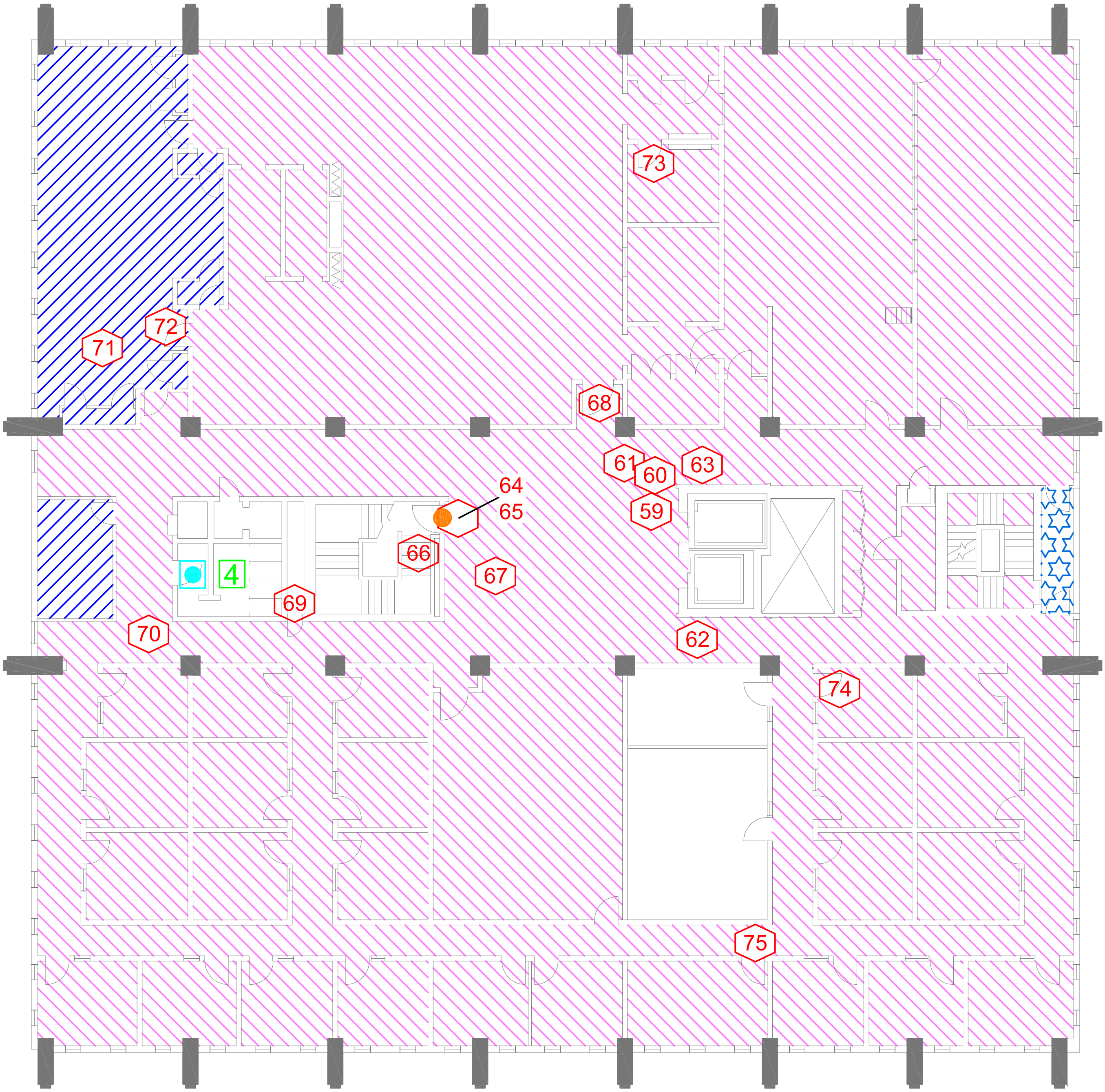
Asbestos-containing Ceiling Tiles

Asbestos-containing Fire Proofing

Notes:
Non-asbestos-containing Ceiling Tiles Are Contaminated With Fireproofing Where It Exists

CLIENT INFO.		PROJECT No.:	08A-1020
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	CAD No.:	08A1020D-2
		DRAWN BY:	S. Rahman
		DATE:	4/15/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Asbestos Material Survey : Third Level



Explanation

#	Sample Location and Number
#	Number of Pipe Fittings With Asbestos-containing Insulation
	Light Fixture With Asbestos-containing Wire Insulation
	Asbestos-containing Mastic Only
	Asbestos-containing Floor Tile and Mastic
	Asbestos-containing Floor Tile Only
	Asbestos-containing Fire Doors

Notes: Asbestos-containing wall board joint compound throughout.

N

CLIENT INFO.

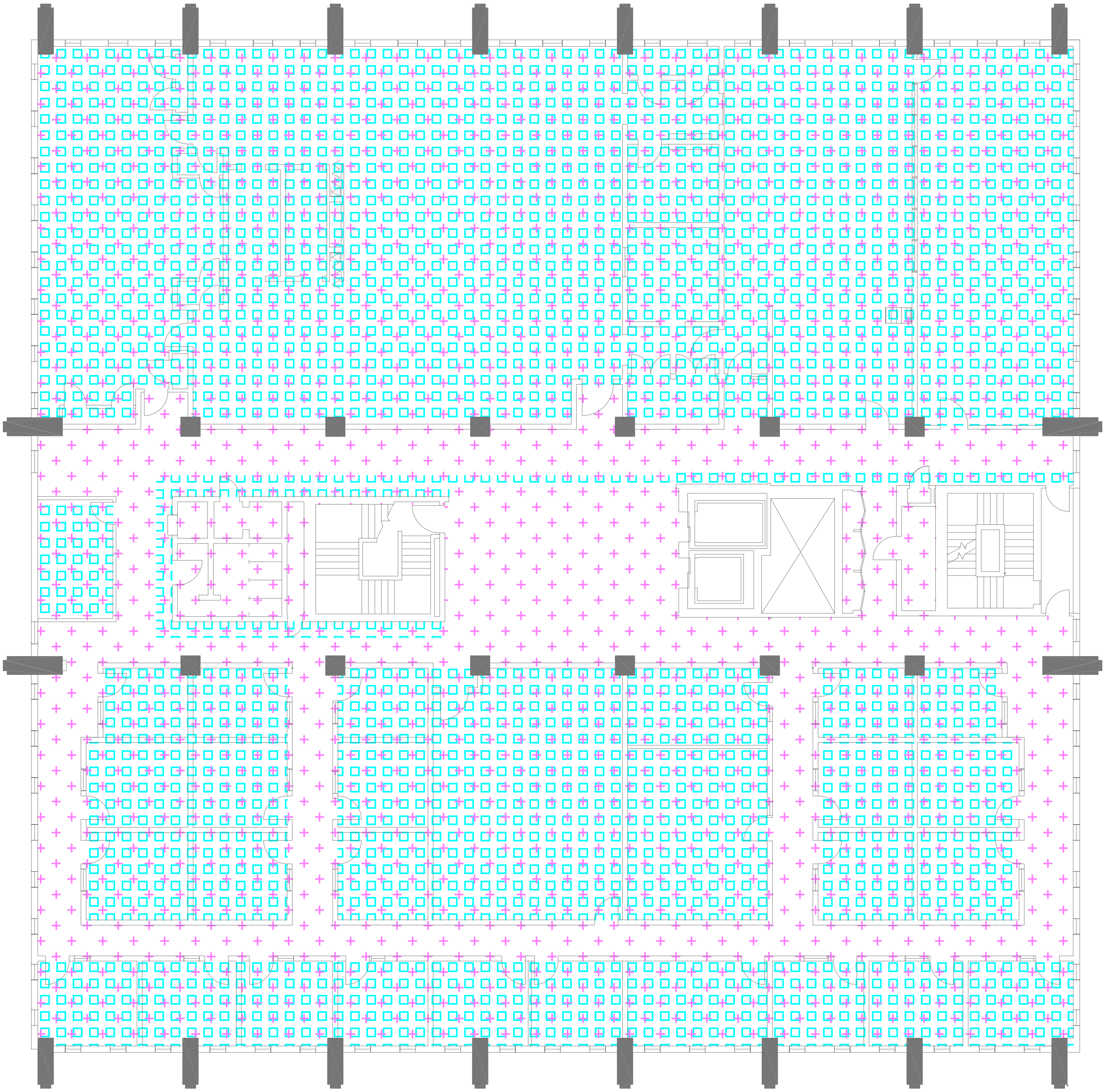
University of Utah
College of Nursing
Salt Lake City, Utah

IHI
ENVIRONMENTAL

Approximate Scale
20 ft

PROJECT No.:	08A-1020
CAD No.:	08A1020E-1
DRAWN BY:	S. Rahman
DATE:	4/15/08
REVISED BY:	
DATE:	

Asbestos Material Survey : Third Level (Ceiling Plan)



Explanation

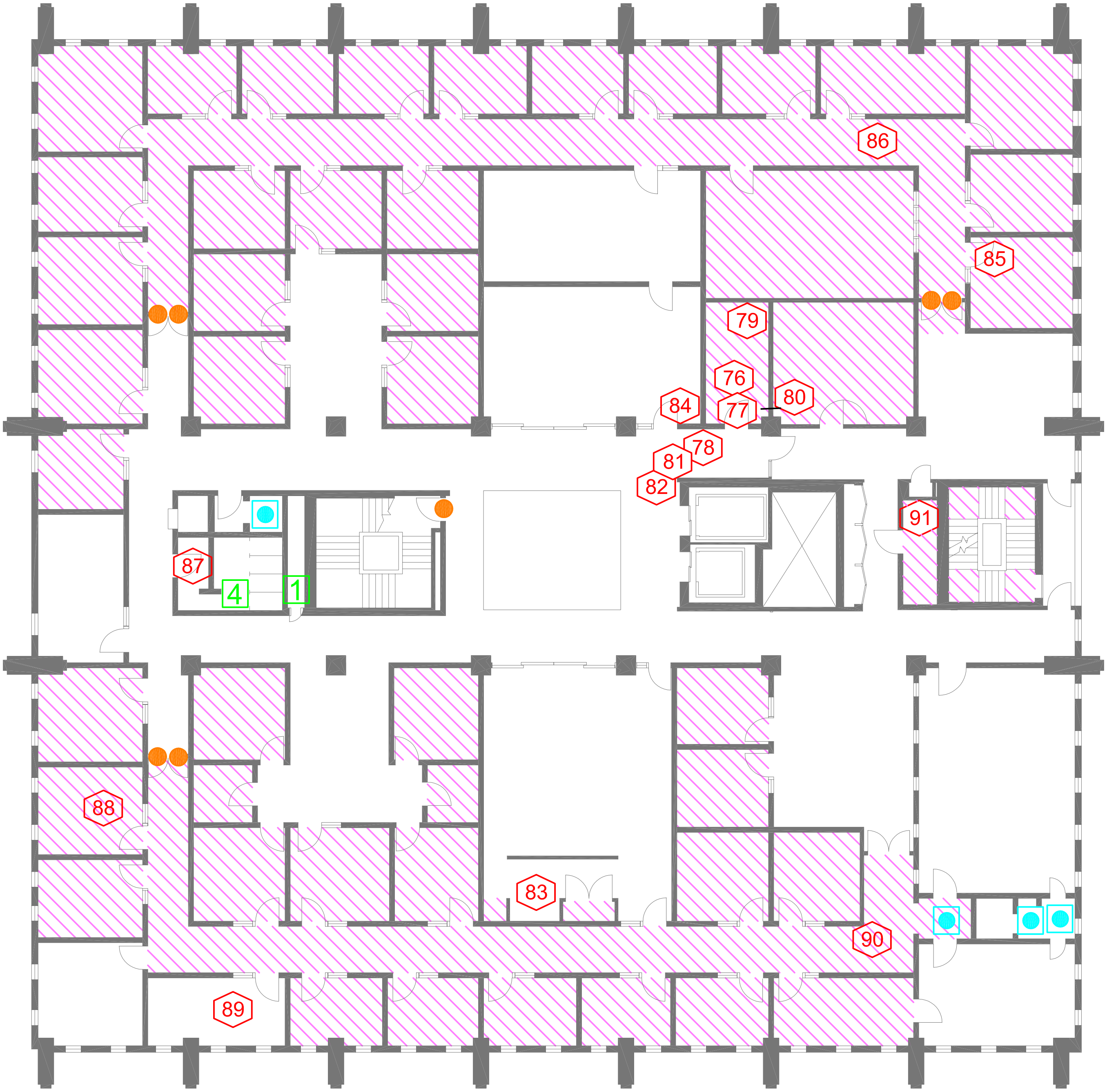
- Asbestos-containing Ceiling Tiles
- Asbestos-containing Fire Proofing

Note:
Non-asbestos-containing Ceiling Tiles Are Contaminated With Asbestos-containing Fire Proofing Where It Exists

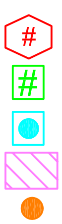
N

CLIENT INFO.		
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	PROJECT No.: 08A-1020 CAD No.: 08A1020E-2 DRAWN BY: S. Rahman DATE: 4/15/08
	Approximate Scale 20 ft	REVISED BY: DATE:

Asbestos Material Survey : Forth Level



Explanation



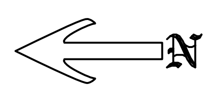
Sample Location and Number

Number of Pipe Fittings With Asbestos-containing Insulation

Light Fixture With Asbestos-containing Wire Insulation

Asbestos-containing Floor Tile and Mastic

Asbestos-containing Fire Doors

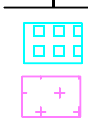


Note:
Asbestos-containing wall board joint compound throughout.

CLIENT INFO.		PROJECT No.: 08A-1020
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	CAD No.: 08A1020F-1
		DRAWN BY: S. Rahman
		DATE: 4/15/08
	Approximate Scale 20 ft	REVISED BY:
		DATE:

Asbestos Material Survey : Forth Level (Ceiling Plan)

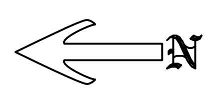
Explanation



Asbestos-containing Ceiling Tiles

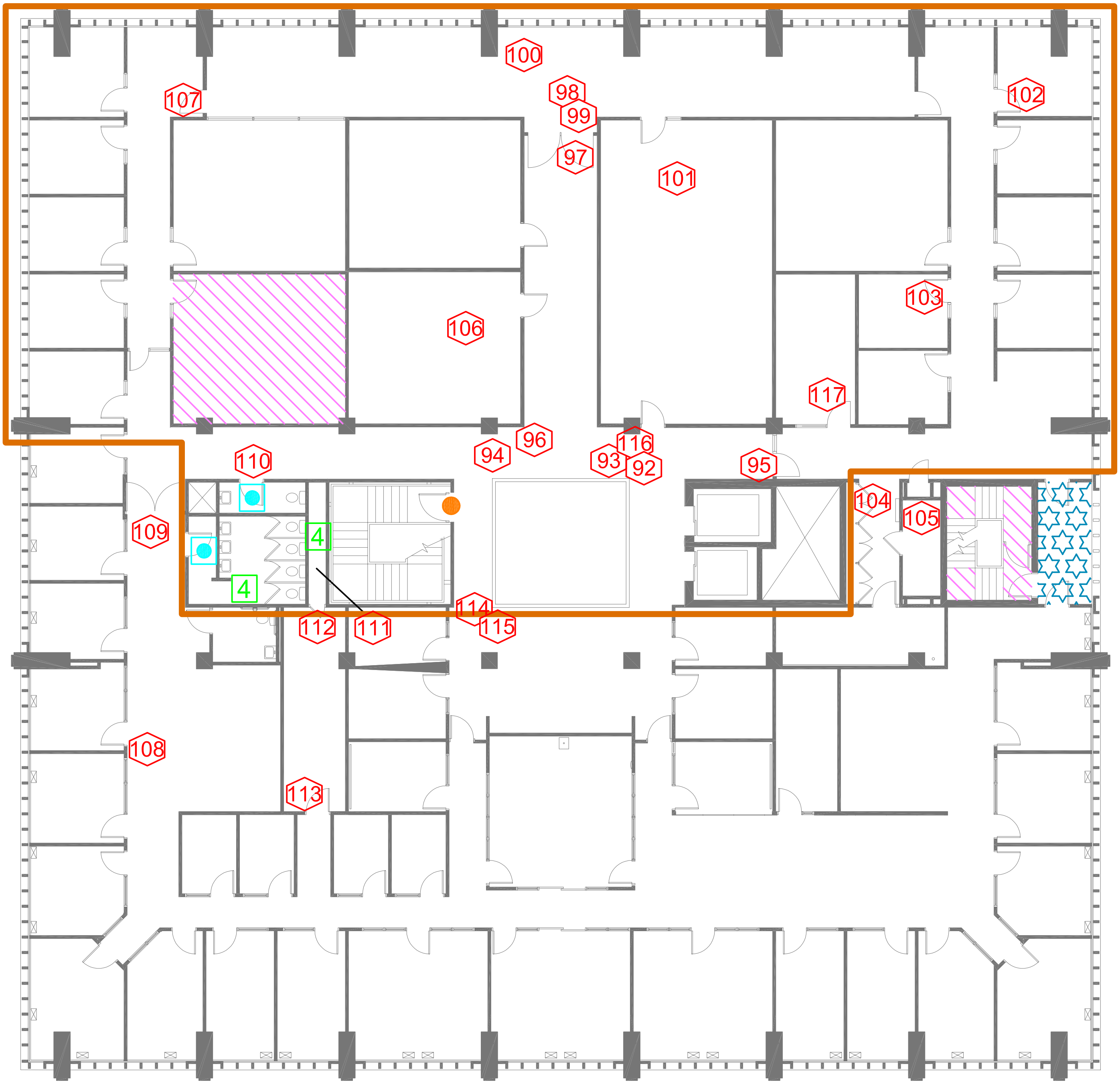
Asbestos-containing Fire Proofing

Notes:
Non-asbestos-containing Ceiling Tiles Are Contaminated With Fireproofing Where It Exists



CLIENT INFO. University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	PROJECT No.:	08A-1020
		CAD No.:	08A1020F-2
		DRAWN BY:	S. Rahman
		DATE:	4/15/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Asbestos Material Survey : Fifth Level



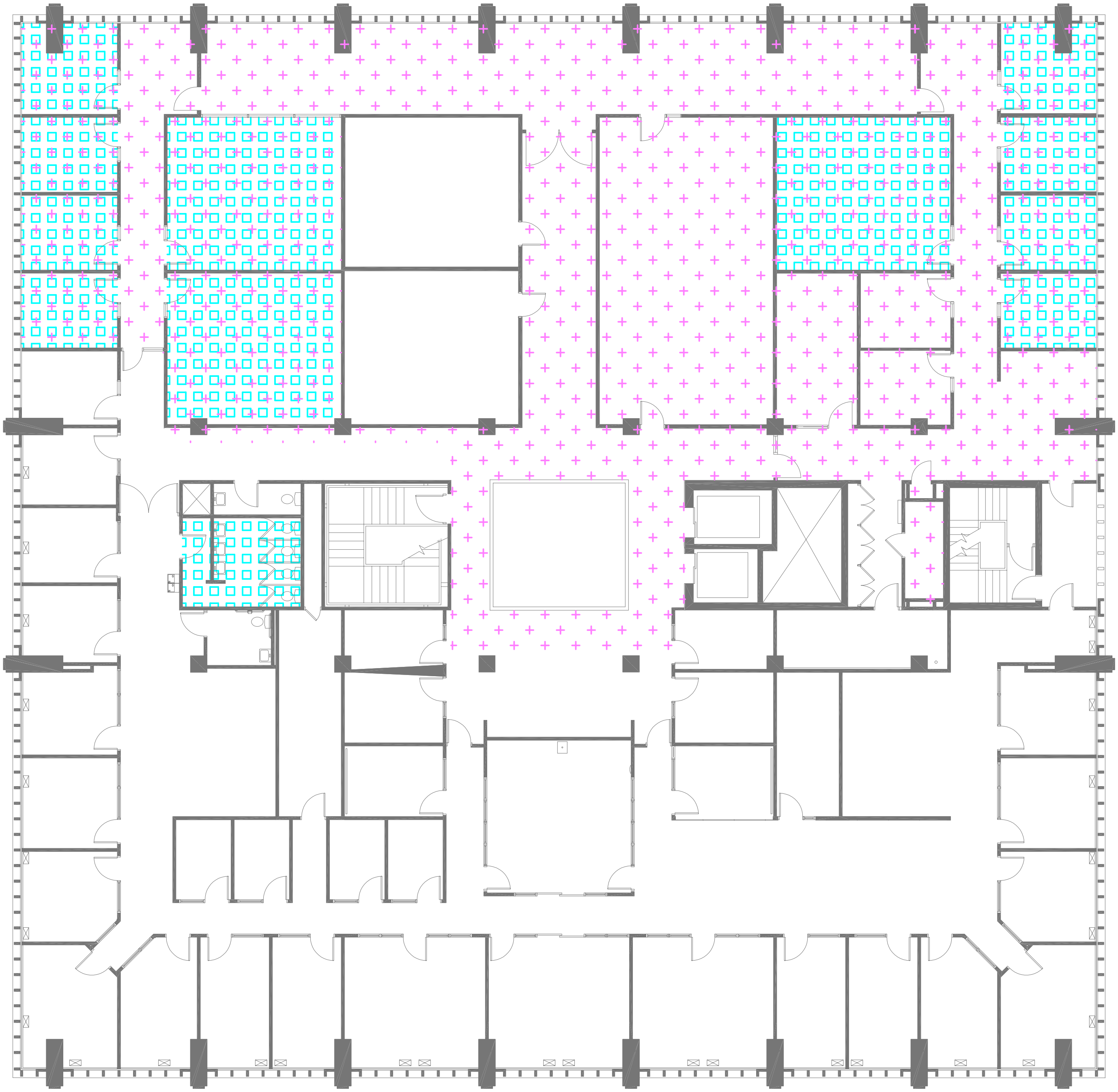
Explanation

- # Sample Location and Number
- # Number of Pipe Fittings With Asbestos-containing Insulation
- Light Fixture With Asbestos-containing Wire Insulation
- Asbestos-containing Floor Tile and Mastic
- Asbestos-containing Floor Tile Only
- Asbestos-containing Fire Doors
- Asbestos-containing wallboard joint compound within outlined area.

N

CLIENT INFO.	IHI ENVIRONMENTAL	PROJECT No.:	08A-1020
University of Utah College of Nursing Salt Lake City, Utah		CAD No.:	08A1020G-1
		DRAWN BY:	S. Rahman
		DATE:	4/16/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Asbestos Material Survey : Fifth Level (Ceiling Plan)



Explanation

- Asbestos-containing Ceiling Tiles
- Asbestos-containing Fire Proofing

Notes:
Non-asbestos-containing Ceiling Tiles Are Contaminated With Fireproofing Where It Exists

N

CLIENT INFO.

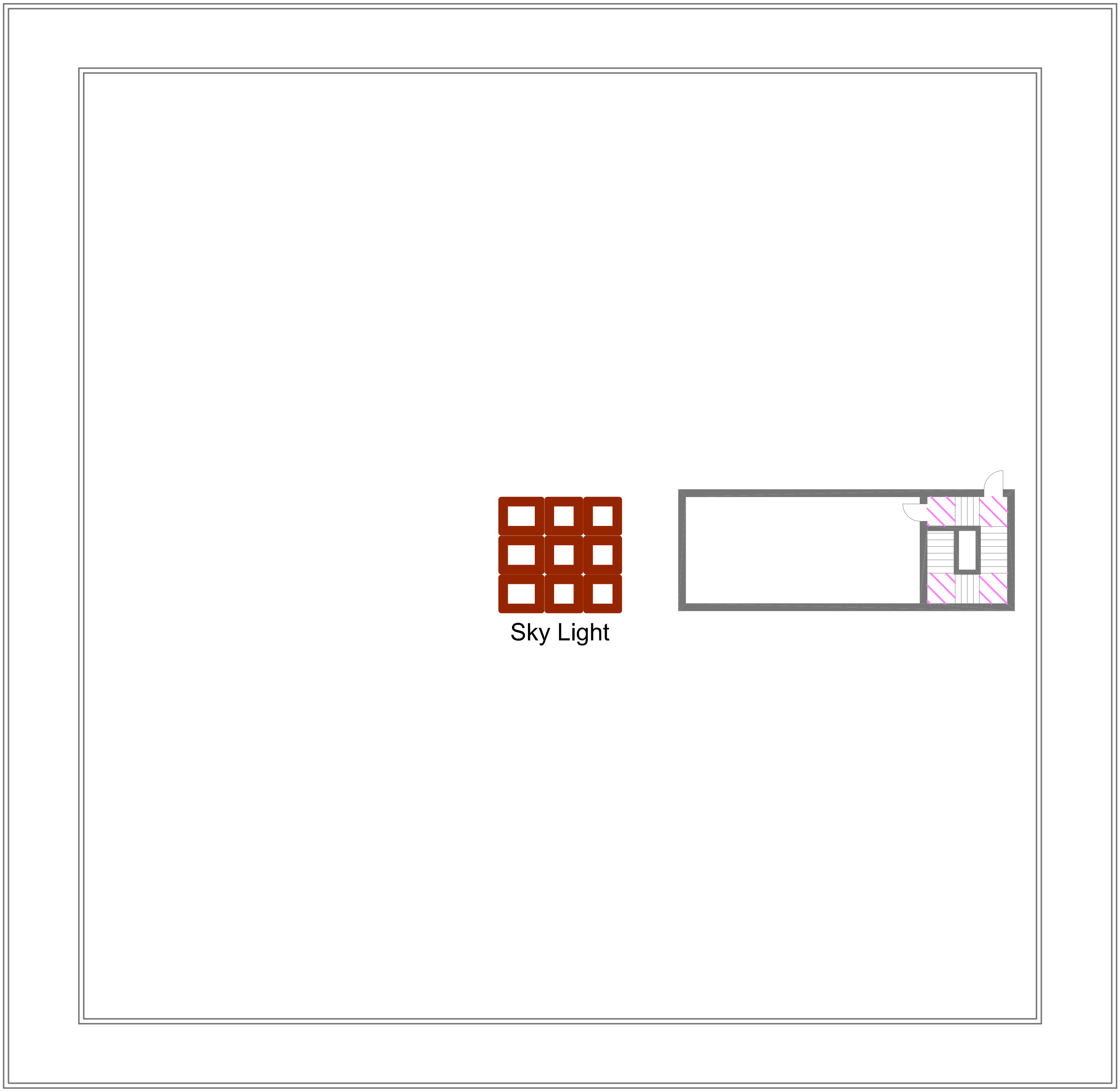
University of Utah
College of Nursing
Salt Lake City, Utah

IHI ENVIRONMENTAL

Approximate Scale
20 ft

PROJECT No.:	08A-1020
CAD No.:	08A1020G-2
DRAWN BY:	S. Rahman
DATE:	4/16/08
REVISED BY:	
DATE:	

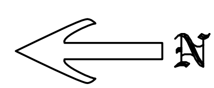
Asbestos Material Survey : Penthouse / Roof



Explanation

Assumed Asbestos-containing Tar Sealant

Asbestos-containing Floor Tile and Mastic



CLIENT INFO. University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.:	08A-1020
		CAD No.:	08A1020H-1
		DRAWN BY:	S. Rahman
		DATE:	4/16/08
		REVISED BY:	
		DATE:	

LEAD PAINT INSPECTION
UNIVERSITY OF UTAH
COLLEGE OF NURSING

BUILDING 588
University of Utah Campus
10 South 2000 East
Salt Lake City, Utah

April 9, 2008

Written By:

Lono Folau
Lead Inspector

Reviewed By:

J. Rush Bowers, CIH, CSP
Industrial Hygiene Manager

EXECUTIVE SUMMARY

Between March 31 and April 4, 2008, IHI Environmental (IHI) conducted a lead paint inspection of the University of Utah College of Nursing building, located at 50 North Medical Drive in Salt Lake City, Utah. The work was conducted at the request of Mr. Bill Bowen with the State of Utah Division of Facilities Construction and Management (DFCM). The purpose of the inspection was to identify lead coatings on building components in anticipation of renovation work on the building.

Measurements were made on representative painted surfaces throughout the building using a NITON 300 series X-ray Fluorescence (XRF) Spectrum Analyzer. The XRF instrument non-destructively detects the presence of lead in paint and other surface coatings.

Significant lead concentrations were measured in paint on the exterior concrete parking stalls and in glazing on the interior ceramic tile walls in bathrooms and janitor closets. Most of the coatings were in good condition at the time of the survey. Coatings on some components had measurable lead concentrations in some locations and none detected in others, presumably the result of past renovation work in the building.

Because of the amount and extent of lead-containing coatings on building components, IHI Environmental recommends that all work be conducted according to the requirements of the OSHA Lead in Construction Standard.

1.0 INTRODUCTION

Between March 31 and April 4, 2008, IHI Environmental conducted a lead paint inspection of the University of Utah College of Nursing Building, located at 50 North Medical Drive in Salt lake City, Utah. The purpose of the inspection was to identify lead-containing paint on interior and exterior components of the building in anticipation of extensive restoration work. The work was requested by Mr. Bill Bowen with the State of Utah DFCM, and was performed under Contract dated, February 5, 2008.

The US Department of Housing and Urban Development (HUD) *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* (HUD Guidelines), Chapter 7: Lead –Based Paint Inspection, 1997 Revision, were generally followed for this survey, with modifications appropriate for a non-residential building.

2.0 BUILDING DESCRIPTION

The College of Nursing Building 588 consists of five floors above grade. Construction was completed in 1969. The total interior area of the building is approximately 85,200 square feet. The building is constructed of red brick with a flat roof. Original interior walls are gypsum board wall systems and wood. Floor finishes include concrete, carpet, vinyl sheeting and vinyl floor tile.

3.0 LEAD PAINT DEFINITIONS

The U.S. Department of Housing and Urban Development (HUD) and EPA define “lead-based paint” as any coating that has a lead concentration of 1.0 milligram per square centimeter (mg/cm^2) or greater, or if the lead concentration is greater than 0.5% by weight. The Consumer Product Safety Commission (CPSC) currently considers paint to be lead containing if the concentration of lead exceeds 600 parts per million (ppm), or 0.06% by weight. Both the CPSC and HUD definitions of lead-containing paint are aimed at protecting the general population from exposure to lead in the residential setting.

The Occupational Safety and Health Administration (OSHA) Lead in Construction Standard (29 CFR 1926.62) was intended to apply to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures during construction work. OSHA states that construction work (including renovation, maintenance, and demolition) carried-out on structures coated with paints that have lead concentrations lower than the HUD or CPSC can still result in hazardous airborne lead concentrations.

4.0 SURVEY PROCEDURES

4.1 Paint Sampling Methods

Direct measurements of lead in paint were made using a NITON X-ray Fluorescence (XRF) Spectrum Analyzer (Serial Number XL309 – U3658NR7510). The NITON Paint Analyzer non-destructively measures lead concentrations in painted surfaces, regardless of the number of paint layers present. The instrument was developed specifically for addressing lead-based paint issues in housing. Its use in identifying potential exposure hazards for building renovation or construction work is often augmented with selective collection and analysis of physical chip samples. The XRF measurements were made according to the requirements of Chapter 7 of the HUD "Guidelines for the Control of Lead-based Paint Hazards in Housing," with appropriate modifications for a non-residential structure.

4.2 XRF Calibration

Before beginning the testing and after the testing was completed each day, the internal calibration of the NITON was checked by taking three consecutive measurements on a red (1.02 mg/cm^2) National Institute for Standards and Technology (NIST #2573) standard paint film. Three more readings were taken on a lead-free white NIST #2570 film. These calibration checks are performed to detect changes in the instrument performance. The calibration values obtained were compared to the calibration check tolerance values on the XRF Performance Characteristic Sheet for the instrument to ensure that it was operating within the stated tolerance limits.

4.3 Field Documentation

Field data forms were used to manually record information about individual XRF measurements. This information includes the room number, the building component (such as wall, ceiling, door, baseboard, cabinet, etc.), component substrate (for example, drywall, wood, metal, concrete), and paint condition. The field data forms are then used by the inspector to couple measurement-specific descriptive information to the sequential data once the instrument's electronic memory has been downloaded to a personal computer. This information is then manipulated by the instrument's software to generate data tables for the written report.

5.0 FINDINGS

The individual lead paint measurements made during this survey are located in Table 1 in Appendix A. Table 1 lists all of the measurements made in the building by room number. The "room side" column in the table represents which side of the room an XRF reading was taken. The letter convention used is as follows: A= East of building, B = South, C = West, D = North, or in a clockwise direction.

For each measurement, the lead concentration as indicated by the XRF instrument in mg/cm^2 is presented. Because the accuracy of XRF instruments is limited below 1.0 mg/cm^2, it should be noted that lead might be present in low concentrations in paint even though the XRF indicates a concentration of 0.0 mg/cm^2.

To summarize the findings, the XRF instrument indicated that the following building components contained measurable levels of lead in one or more locations. Please see Table 1 for room-specific findings.

Interior components:

- Ceramic tile walls (4.4 to 28 mg/cm^2)
- Metal I-beams (1.0 mg/cm^2)
- Brick columns (1.0 mg/cm^2)
- Concrete Floor in Penthouse (0.23 mg/cm^2)
- Concrete walls/ceilings (0.00 to 0.2 mg/cm^2)
- Metal door jambs/casings (0.00 to 0.19 mg/cm^2)

- Metal fire hose/extinguisher boxes (0.00 to 0.17 mg/cm^2)
- Drywall walls (0.00 to 0.16 mg/cm^2)
- Metal window sills/casings/frames (0.00 to 0.11 mg/cm^2)

Exterior components:

- Parking stalls (4.1 to 4.4 mg/cm^2)
- Metal Pipes (0.03 mg/cm^2)

The paint on interior and exterior components was generally in good condition throughout the building.

6.0 DISCUSSION AND RECOMMENDATIONS

Lead was found in high concentrations on the interior ceramic tile walls of the restrooms and janitor closets. Also, lead concentrations were high on the exterior concrete parking stalls. Lead-based paint was identified on metal I-beams and brick columns. Lead was present in low concentrations on the metal doorjambs and casings, metal window frames and sashes, metal pipes, metal fire extinguisher and hose boxes, and concrete walls, floors and ceilings. Therefore, any work with the potential for generating airborne lead should be conducted according to the requirements of the OSHA Lead in Construction Standard. The Lead in Construction Standard specifies that employers are responsible for ensuring that their employees are not exposed to airborne lead levels exceeding the OSHA permissible exposure limit (PEL) of fifty micrograms per cubic meter or air (50 $\mu g/m^3$) averaged over an 8-hour period and take appropriate precautions when exposures reach an action level of 30$\mu g/m^3$ averaged over an 8-hour period. The standard was written to require exposure monitoring or the use of historical or objective data to ensure that employee exposures do not exceed the action level.

OSHA has recognized, however, that for certain workplace conditions, application of objective data to certain tasks may be warranted. These tasks include power tool cleaning with dust collection systems, manual demolition of structures, manual scraping, and manual sanding. For these applications only, OSHA has adopted the CPSC threshold under a very limited set of conditions. Specifically, when paint contains trace amounts of lead (e.g., 0.06% and below, as defined by the Consumer Products Safety Commission as non-lead containing), the employer may determine the concentration of lead in the air (i.e., employee exposure) by multiplying the total airborne concentration of dust times the percentage of lead in the paint. OSHA has stated that this does not set 0.06% as a lower threshold for the concentration of lead in paint that would exempt the employer from the requirements of the standard. The employer must still follow all requirements of the standard and conduct an exposure assessment for the tasks involving lead.

7.0 LIMITATIONS AND EXCLUSIONS OF WARRANTY

This inspection was performed using procedures and a level of diligence typically exercised by professional consultants performing similar services. However, lead-based paint (LBP) can be present in a surface, but not identified using ordinary investigative procedures.

No lead inspection can completely eliminate uncertainty regarding the presence of LBP. IHI level of diligence and investigative procedures are intended to reduce, but not eliminate, potential uncertainty regarding the presence of LBP. The procedures used for this inspection attempt to establish a balance between the competing goals of limiting investigative costs, time, and building damage, and reducing the uncertainty about unknown conditions. Therefore, the determinations in this report should not be construed as a guarantee that all LBP present in the subject property has been included in this report.

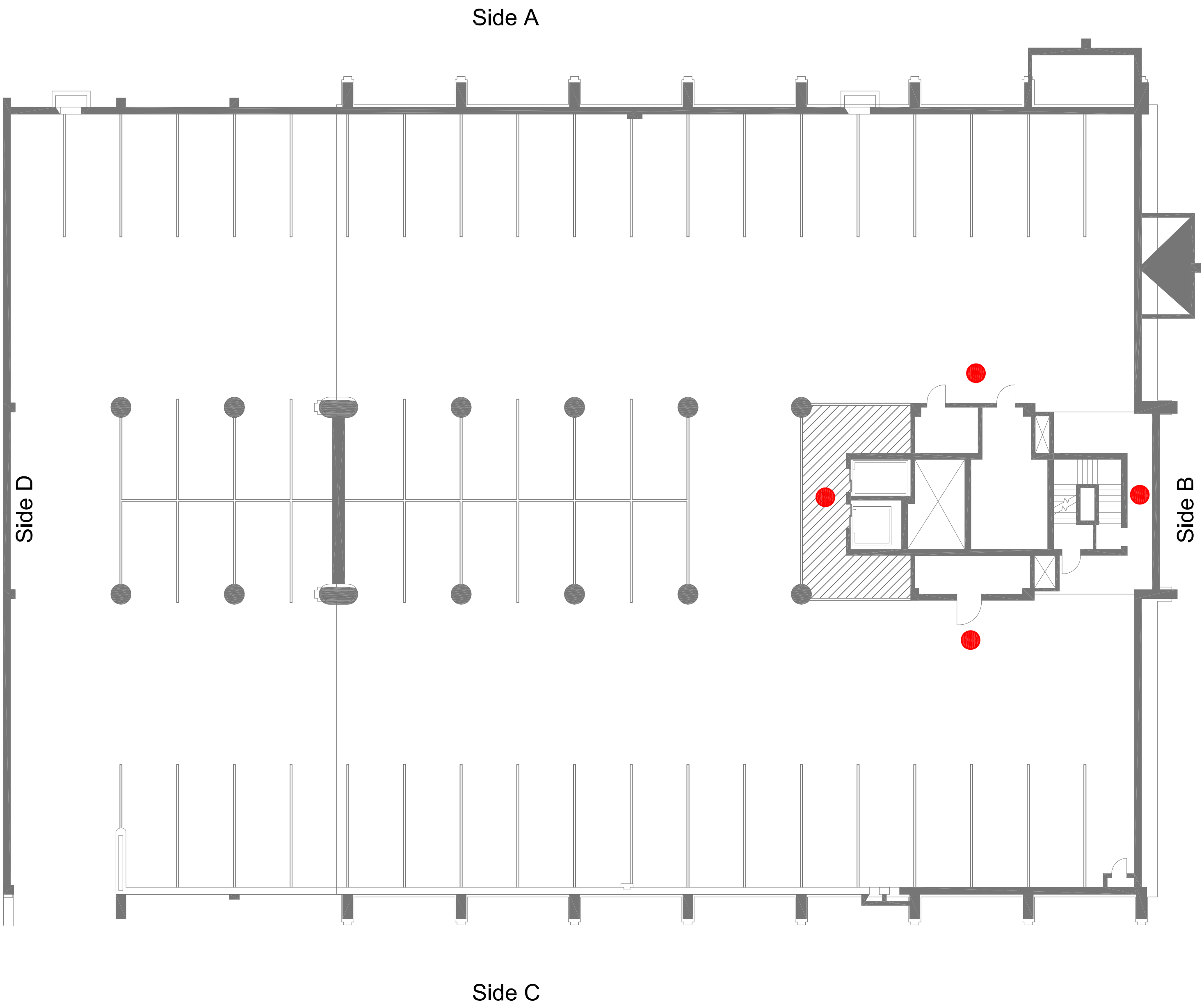
This report presents IHI professional determinations, which are dependent upon information obtained during the performance of consulting services. IHI Environmental assumes no responsibility for omissions or errors resulting from inaccurate information provided by sources outside of IHI Environmental.

No warranty or guarantee, expressed or implied, is made regarding the findings, conclusions, or recommendations contained in this report. The limitations presented above supersede the requirements or provisions of all other contracts or scopes of work, implied or otherwise, except those stated or acknowledged herein.

APPENDIX B

BUILDING FLOOR PLANS

Lead-Based Paint Survey : Lower Level Parking



EXPLANATION

● Room Tested With The XRF NITON Lead Analyzer

Notes:
1. Lead based paint in yellow (stall) lines on concrete parking.

N

CLIENT INFO.

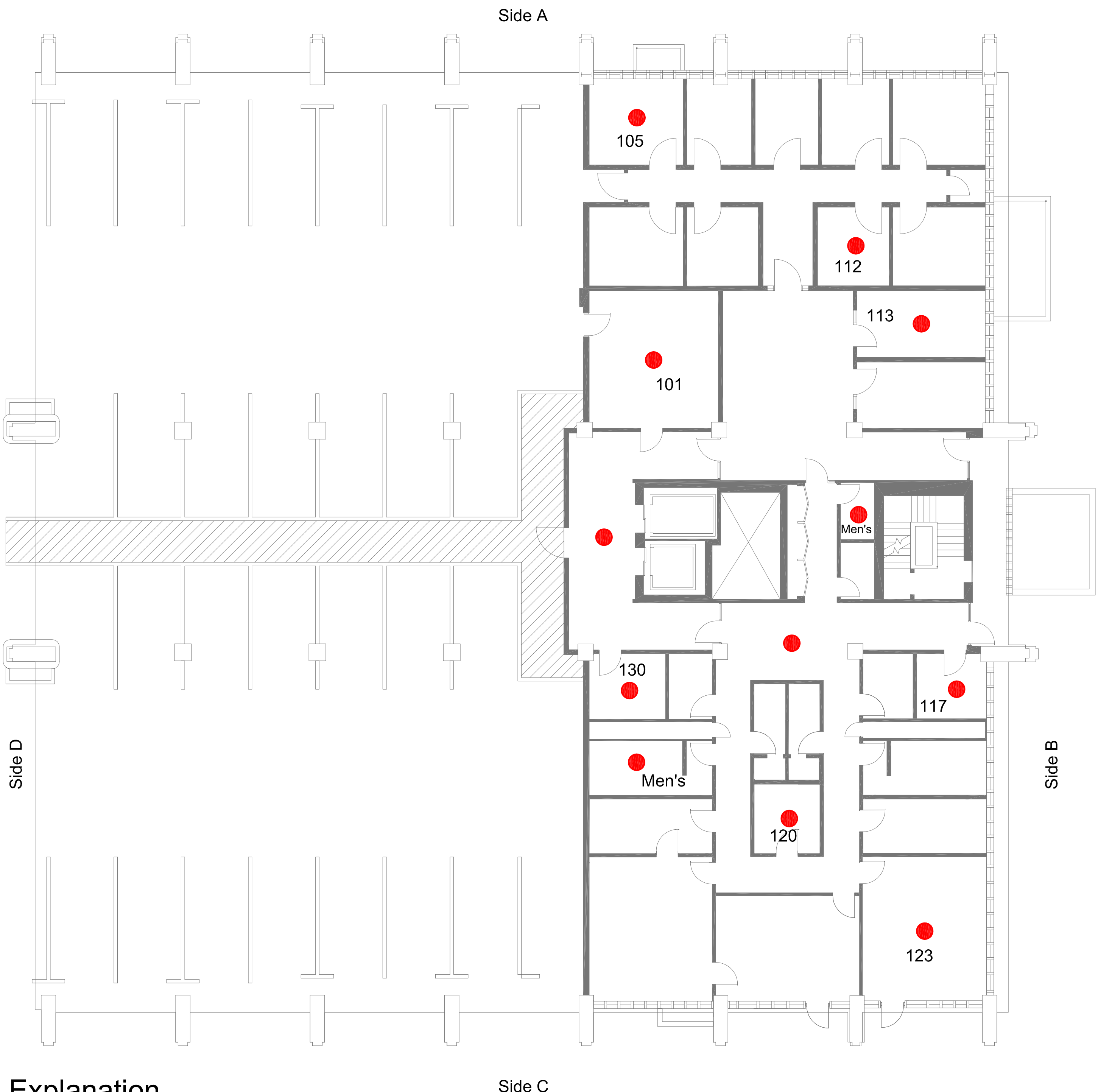
University of Utah
College of Nursing
Salt Lake City, Utah

IHI ENVIRONMENTAL

Approximate Scale
20 ft

PROJECT No.:	08A-1020
CAD No.:	08A1020B-3
DRAWN BY:	S. Rahman
DATE:	4/14/08
REVISED BY:	
DATE:	

Lead-Based Paint Survey : First Level



Explanation

● Room Tested With XRF Niton Lead Analyzer (NITON 300)

Notes:

Lead-based paint in yellow stall lines on concrete packing.

Lead-based glaze on bathrooms ceramic tile walls.

Lead-containing paint on metal door jambs.

Lead-containing paint on some drywall walls.

N

CLIENT INFO.		
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.: 08A-1020 CAD No.: 08A1020C-4 DRAWN BY: S. Rahman DATE: 4/14/08 REVISED BY: DATE:

Lead-Based Paint Survey : Second Level

EXPLANATION

● Room Tested With The XRF Niton Lead Analyzer (NITON 300)

Notes:

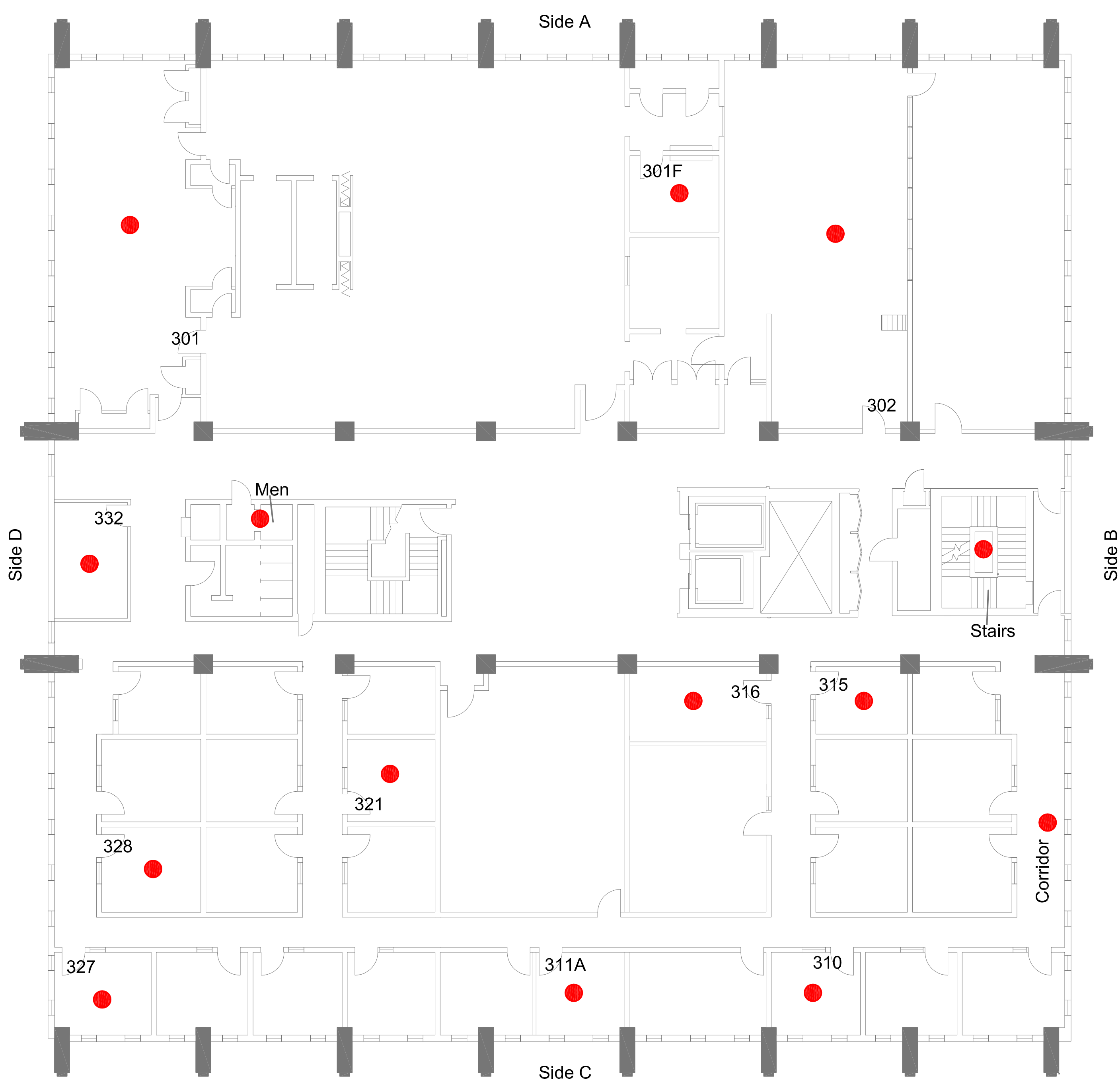
Lead-based glaze on bathrooms' and janitors' ceramic tile walls.

Lead-containing paint on metal fire hose boxes.

Lead-containing paint on some drywall walls.

CLIENT INFO.		
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.: 08A-1020 CAD No.: 08A1020D-4 DRAWN BY: S. Rahman DATE: 4/15/08 REVISED BY: DATE:

Lead-Based Paint Survey : Third Level



Room Tested With The XRF Niton Lead Analyzer (NITON 300)

Notes:

Lead-based glaze on bathrooms' ceramic tile walls.

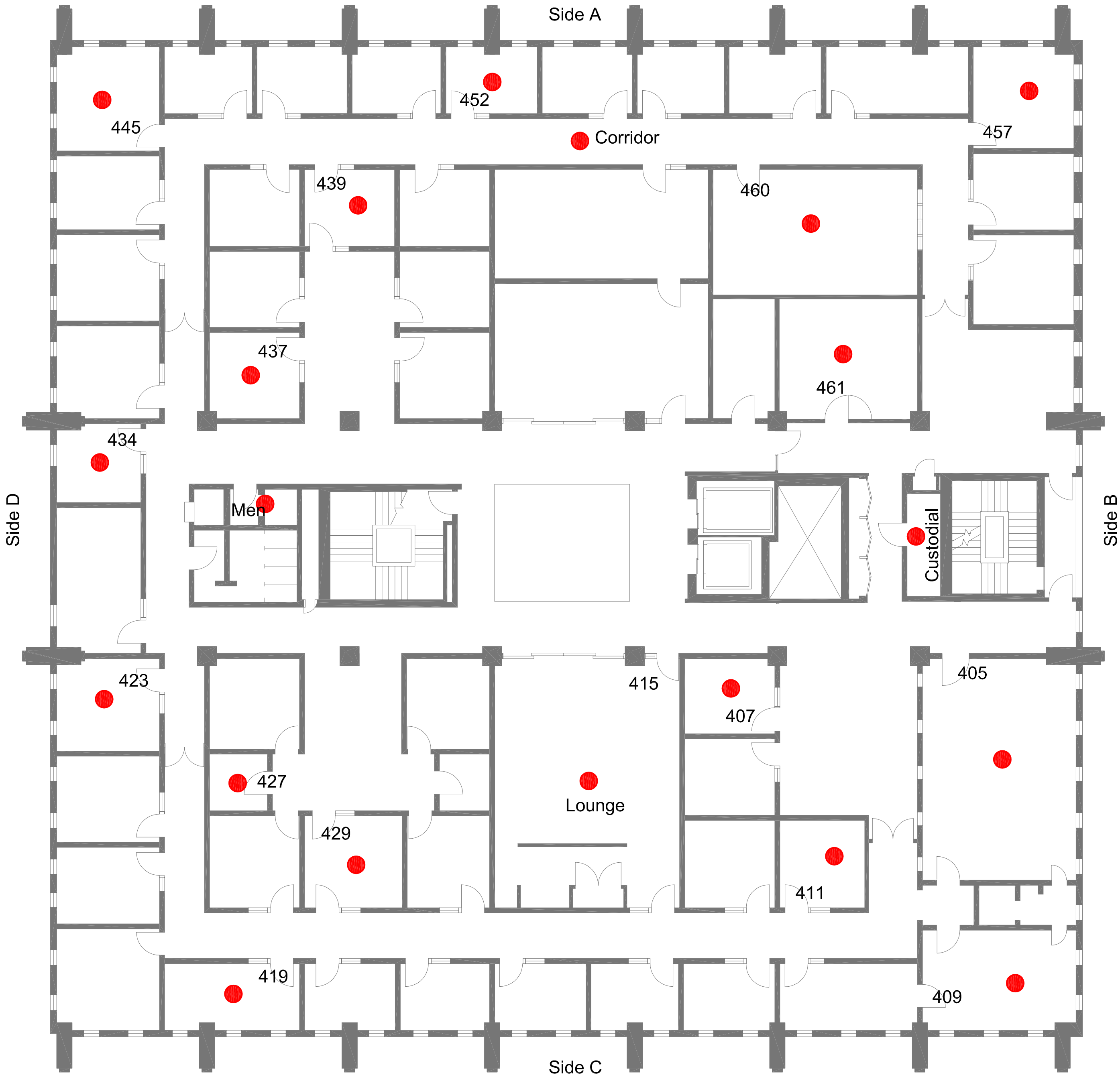
Lead-containing paint on some metal door jambs.

Lead-containing paint on concrete walls / ceilings in E. stairs.

N

CLIENT INFO.			
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	PROJECT No.:	08A-1020
		CAD No.:	08A1020E-4
		DRAWN BY:	S. Rahman
		DATE:	4/15/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Lead-Based Paint Survey : Forth Level



EXPLANATION

Room Tested With The XRF Niton Lead Analyzer (NITON 300)

Notes:

Lead-based glaze on bathrooms' and janitors' ceramic tile walls.

Lead-containing paint on some drywall walls.

CLIENT INFO.

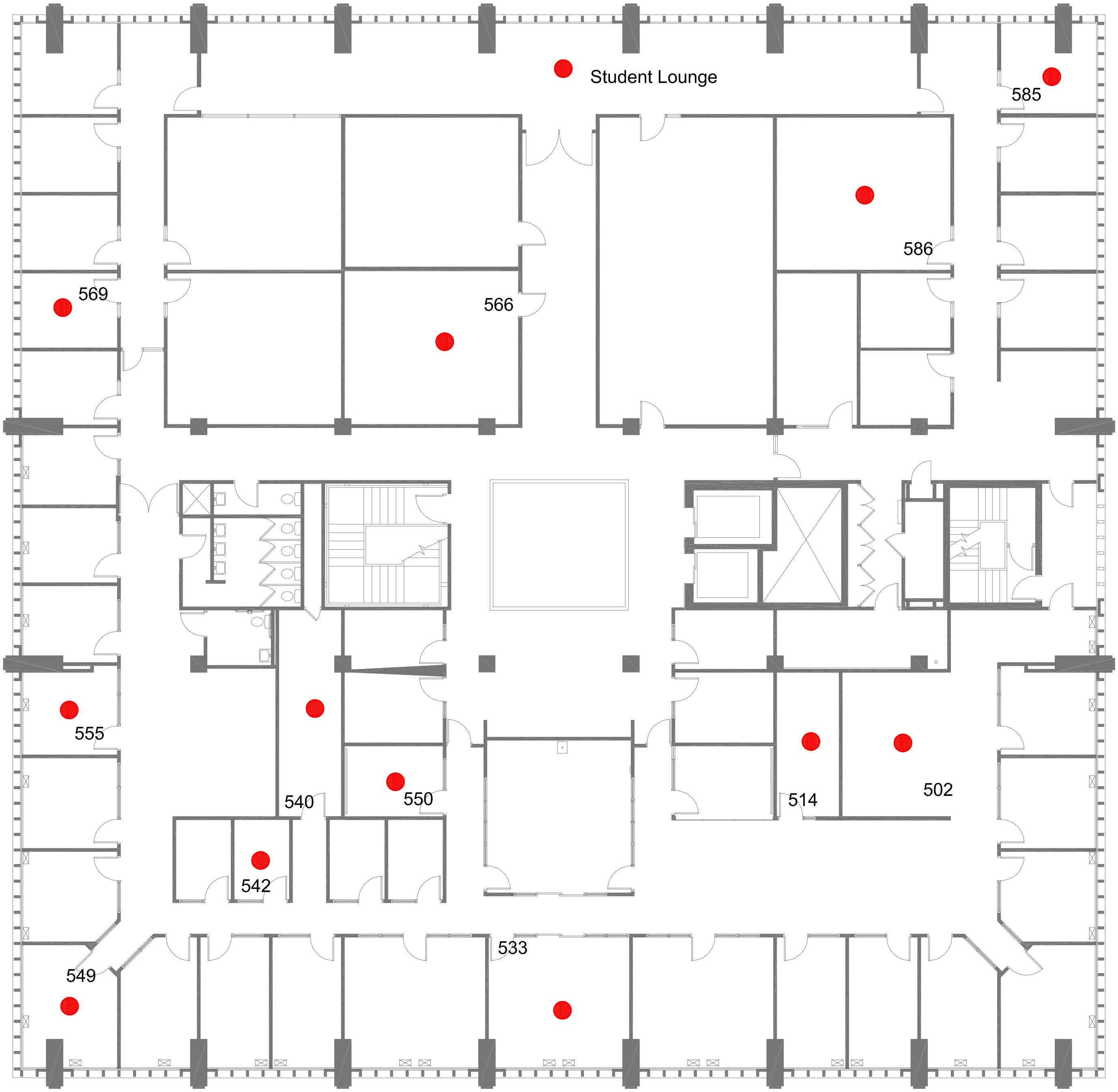
University of Utah
College of Nursing
Salt Lake City, Utah

IHI
ENVIRONMENTAL

Approximate Scale
20 ft

PROJECT No.:	08A-1020
CAD No.:	08A1020F-4
DRAWN BY:	S. Rahman
DATE:	4/16/08
REVISED BY:	
DATE:	

Lead-Based Paint Survey : Fifth Level



EXPLANATION

549

● Room Tested With The XRF Niton Lead Analyzer (NITON 300)

Notes:

Lead-based glaze on bathrooms' and janitors' ceramic tile walls.

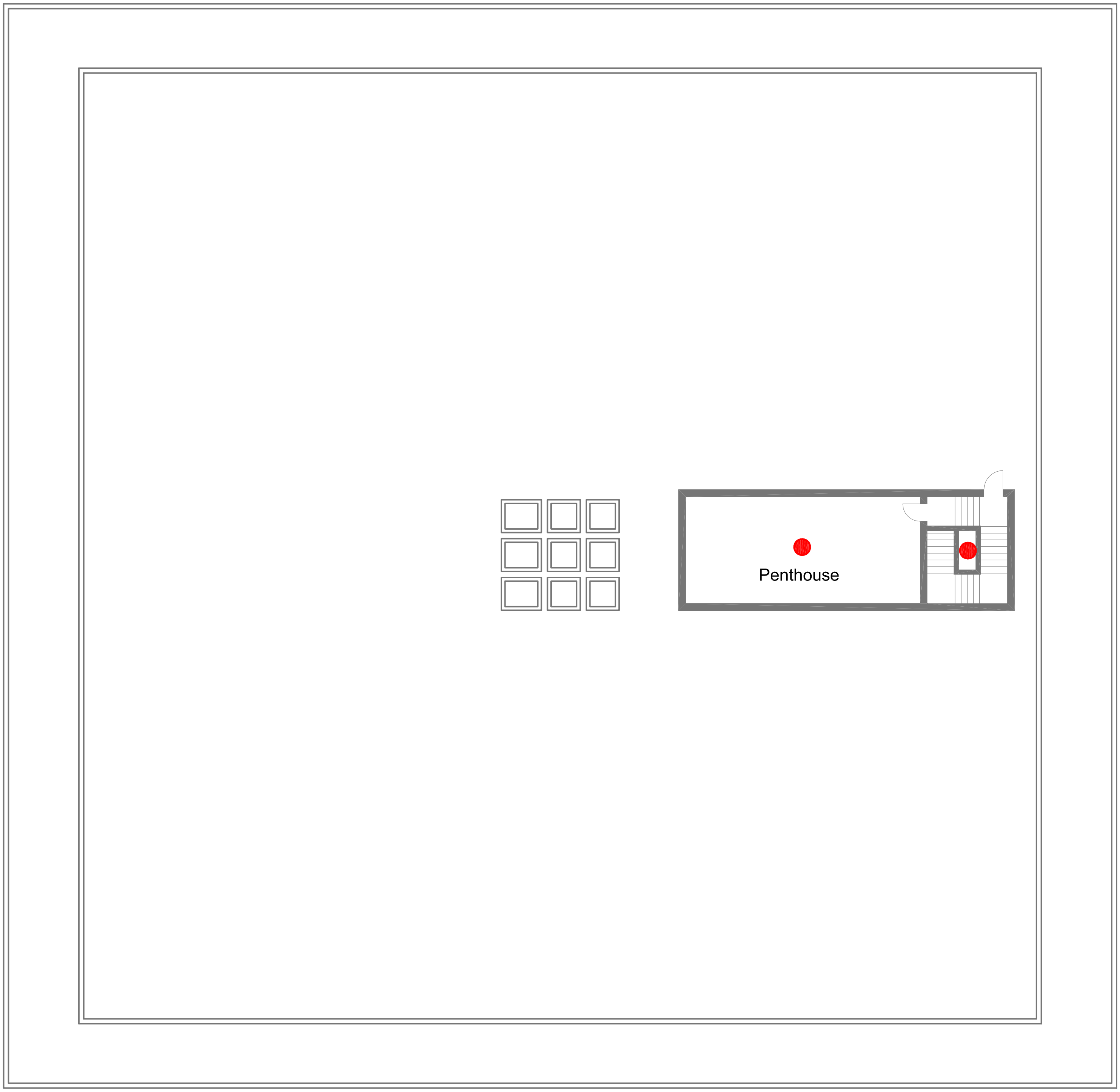
Lead-containing paint on some metal door jambs.

Lead-containing paint on some drywall walls.

N

CLIENT INFO.			
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.:	08A-1020
		CAD No.:	08A1020G-4
		DRAWN BY:	S. Rahman
		DATE:	4/16/08
		REVISED BY:	
		DATE:	

Lead-Based Paint Survey : Penthouse / Roof



EXPLANATION

Room Tested With The XRF Niton Lead Analyzer (NITON 300)

Notes:

Lead-containing paint on concrete floor.

Lead-containing paint on metal mechanical units.

N

CLIENT INFO.			
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	PROJECT No.:	08A-1020
		CAD No.:	08A1020H-3
		DRAWN BY:	S. Rahman
		DATE:	4/16/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Universal Hazardous Materials Survey
For the
University of Utah's College of Nursing
Building 588
University of Utah Campus
10 South 2000 East
Salt Lake City, Utah

April 17, 2008

Submitted to:

Mr. William Bowen
Program Manager
Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

Prepared by:

IHI Environmental
640 East Wilmington Avenue
Salt Lake City, Utah 84106
Phone: (801) 466-2223
Fax: (801) 466-9616

IHI Project No. 08A-1020

Universal Hazardous Materials Survey
For the
University of Utah's College of Nursing
University of Utah Campus

On March 19, 2008, John C. Larson of IHI Environmental completed a universal hazardous material inspection of the University of Utah's College of Nursing, 10 South 2000 East, Salt Lake City, Utah. Mr. Larson is a certified Salt Lake County Health Pre-demolition Building Inspector (PBI-012). The inspection was conducted based on an agreement with Mr. William Bowen, State of Utah Division of Facility Construction and Management (DFCM) Program Manager.

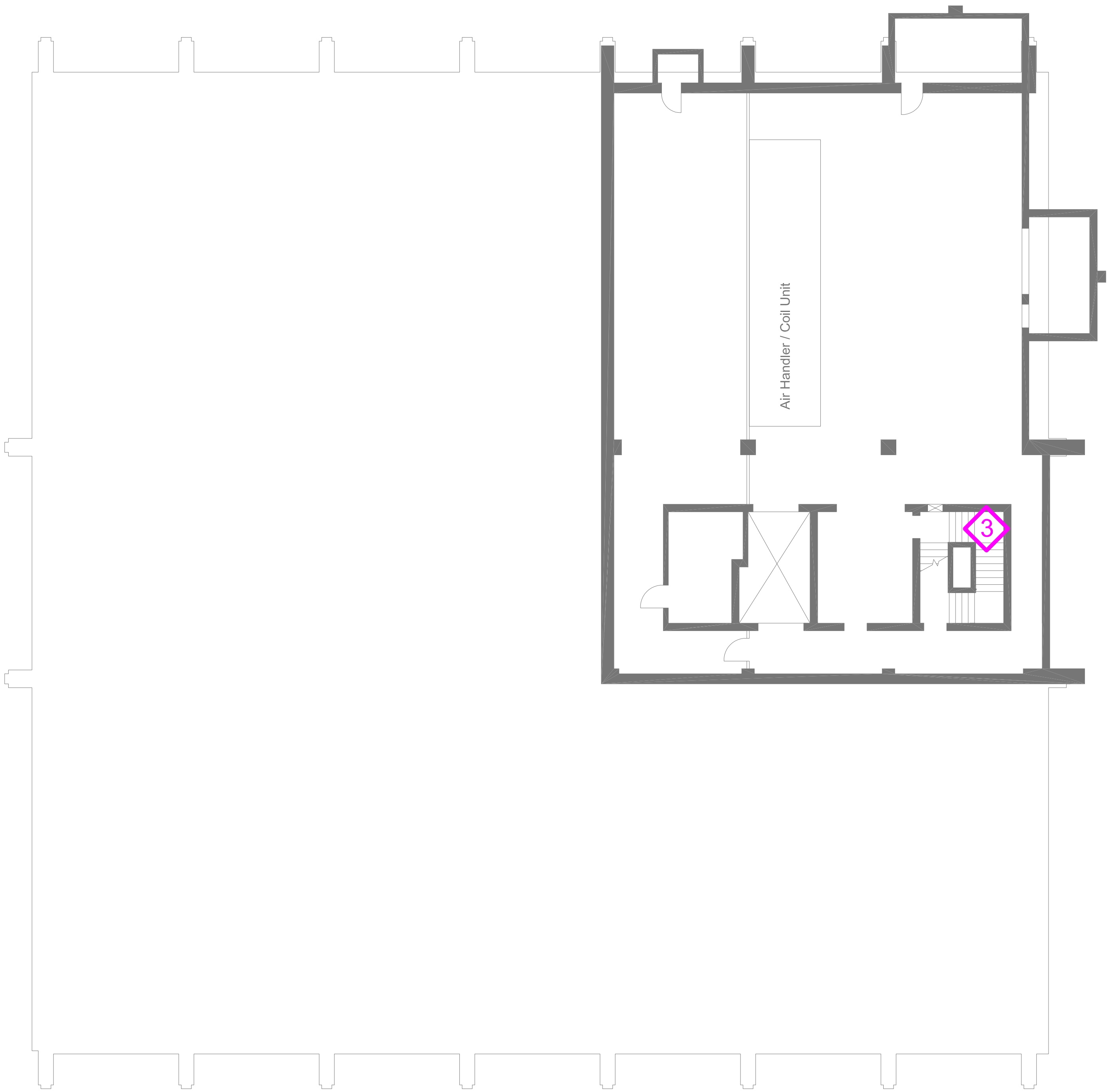
The following hazardous materials were identified in the facility:

Material	Location	Quantity	Unit Cost
Fluorescent light tubes containing mercury	Throughout building	220 (2') tubes 2, 498 (4') tubes 8 (8') tubes 198 (6") bulbs	$0.50/ln. ft
Suspect PCB-containing fluorescent light fixture ballasts	Throughout building	1,525 ballasts	$6/ballast
Refrigeration units containing CFCs	Hallways by public rests rooms	11 drinking fountains	$150/service $50/unit

The Utah State of Division of Facilities Construction and Management (DFCM) requires all Universal Waste, such as fluorescent lights containing mercury, light ballasts containing PCBs, and refrigeration units containing chlorofluorocarbons (CFCs) be disposed at a facility approved to accept such waste for disposal or recycling. These waste streams must be contained in United Nation (UN) specification containers, as required under 49CFR part 173 for transportation and disposal.

Note that some of the fluorescent lights have green ends that contain small amounts of mercury. When large quantities of these tubes are disposed of, there can still be a significant amount of mercury released into the atmosphere. The drinking fountains were the only refrigeration units identified in this survey. The Facilities and Maintenance Management have a program of recycling and disposing of universal hazardous materials.

Hazardous Material Survey : Basement Level



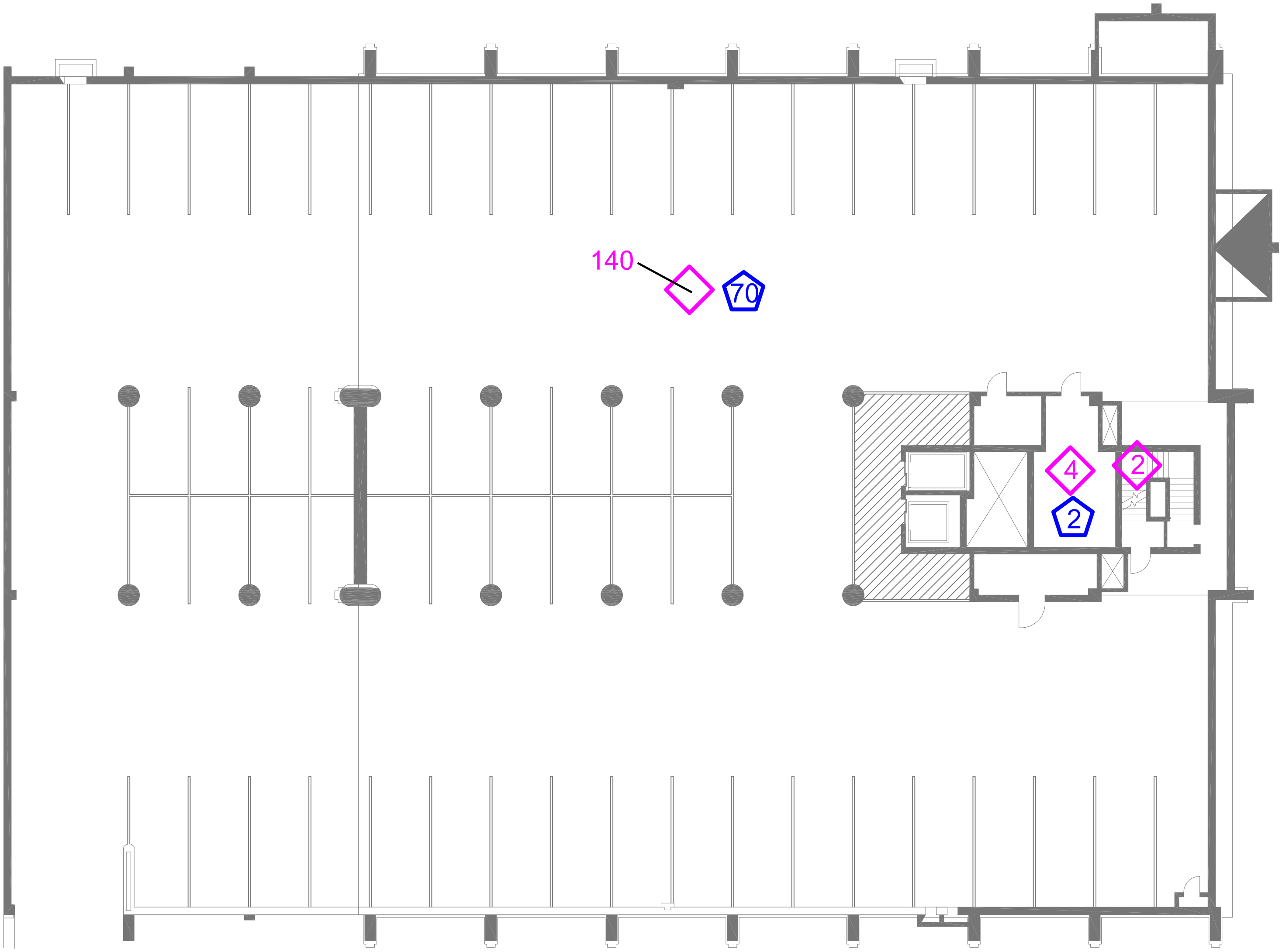
EXPLANATION

\# Number of Mercury Vapor Fluorescent Light Tubes in the Area

N

CLIENT INFO.		PROJECT No.:	08A-1020
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	CAD No.:	08A1020A-2
		DRAWN BY:	S. Rahman
		DATE:	4/14/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Hazardous Material Survey : Lower Level Parking



EXPLANATION

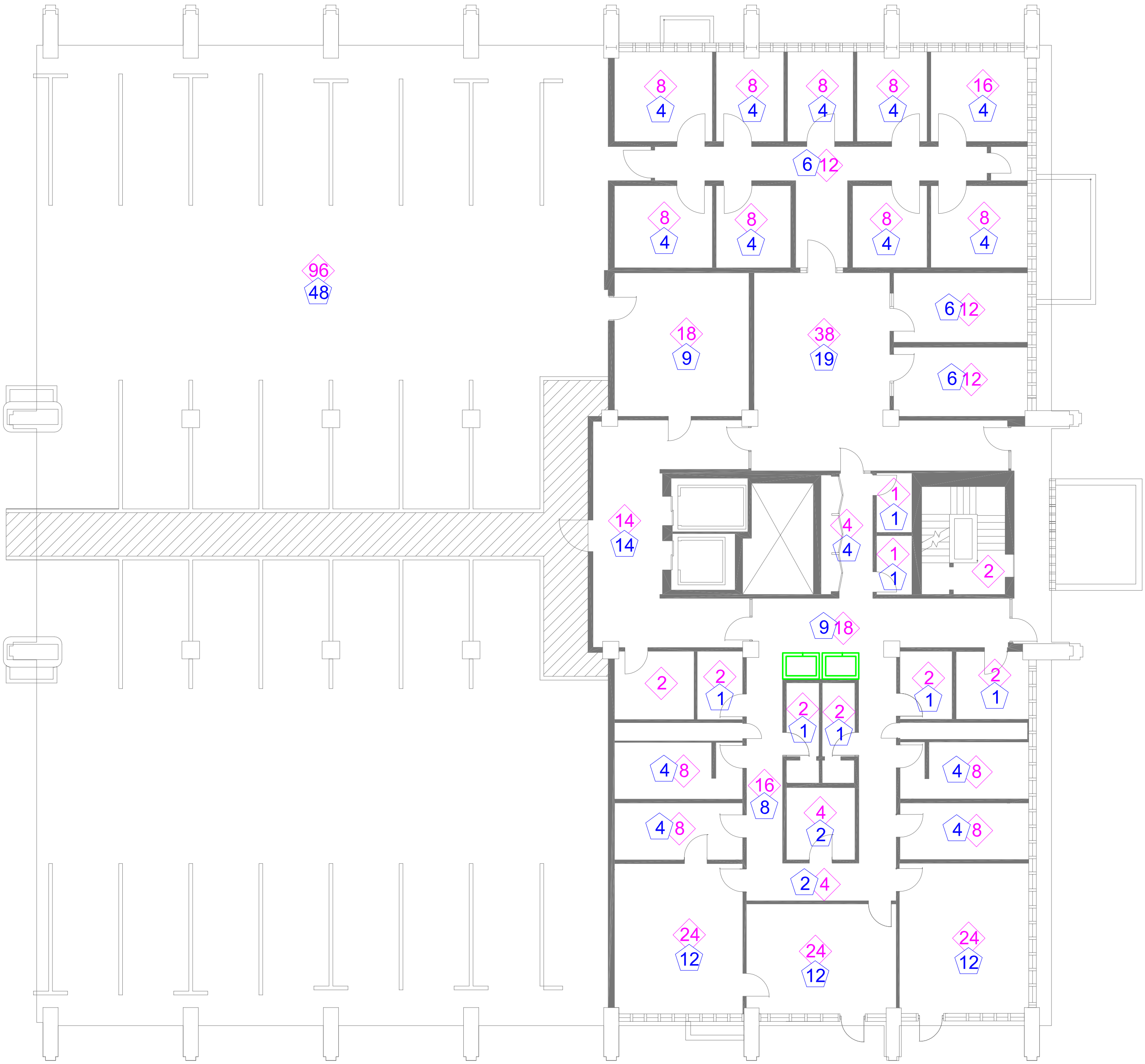
Number of Mercury Vapor Fluorescent Light Tubes in the Area

Number of Suspected PCB Containing Light Fixture Ballasts in the Area

N

CLIENT INFO. University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	PROJECT No.:	08A-1020
		CAD No.:	08A1020B-2
		DRAWN BY:	S. Rahman
		DATE:	4/14/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Hazardous Material Survey : First Level



EXPLANATION

Number of Mercury Vapor Fluorescent Light Tubes in the Area

Number of Suspected PCB Containing Light Fixture Ballasts in the Area

CFC Containing Refrigeration Units

N

CLIENT INFO.

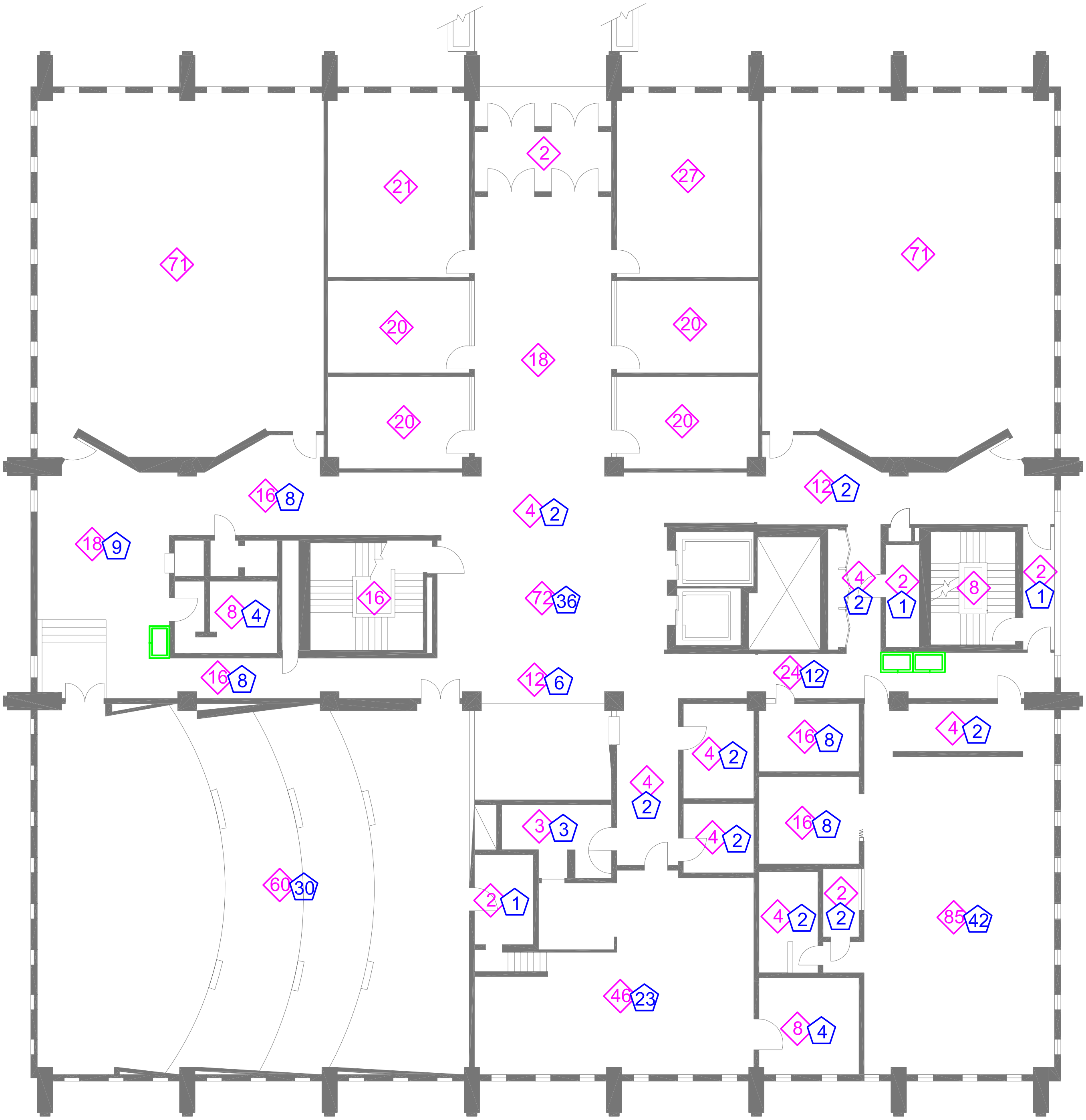
University of Utah
College of Nursing
Salt Lake City, Utah

IHI
ENVIRONMENTAL

Approximate Scale
20 ft

PROJECT No.:	08A-1020
CAD No.:	08A1020C-3
DRAWN BY:	S. Rahman
DATE:	4/14/08
REVISED BY:	
DATE:	

Hazardous Material Survey : Second Level



EXPLANATION

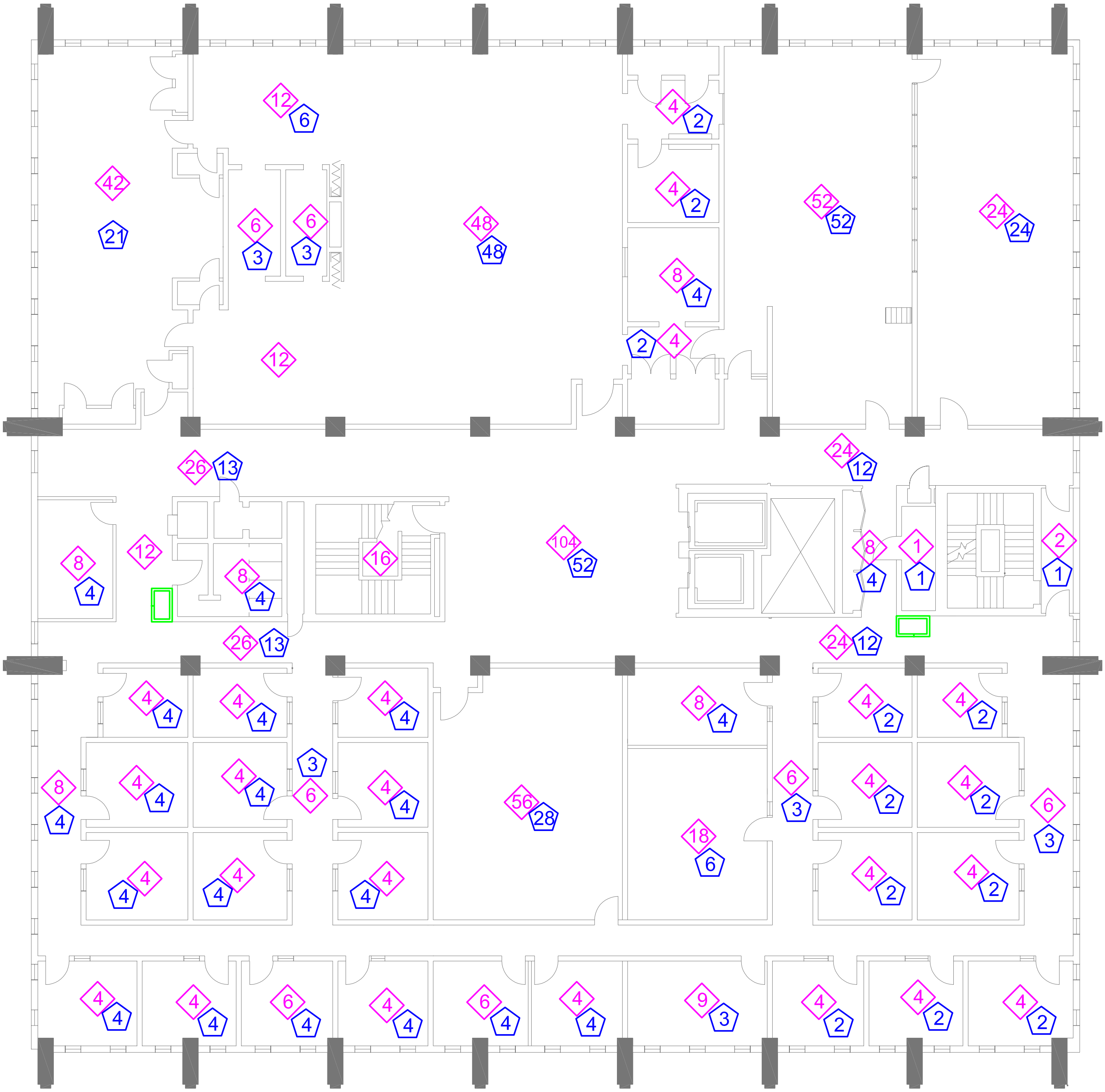
Number of Mercury Vapor Fluorescent Light Tubes in the Area

Number of Suspected PCB Containing Light Fixture Ballasts in the Area

CFC Containing Refrigeration Units

CLIENT INFO.		PROJECT No.:	08A-1020
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	CAD No.:	08A1020D-3
		DRAWN BY:	S. Rahman
		DATE:	4/15/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Hazardous Material Survey : Third Level



EXPLANATION

\# Number of Mercury Vapor Fluorescent Light Tubes in the Area

\# Number of Suspected PCB Containing Light Fixture Ballasts in the Area

CFC Containing Refrigeration Units

N

CLIENT INFO. University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.: 08A-1020 CAD No.: 08A1020E-3 DRAWN BY: S. Rahman DATE: 4/15/08 REVISED BY: DATE:

Hazardous Material Survey : Forth Level

EXPLANATION

Number of Mercury Vapor Fluorescent Light Tubes in the Area

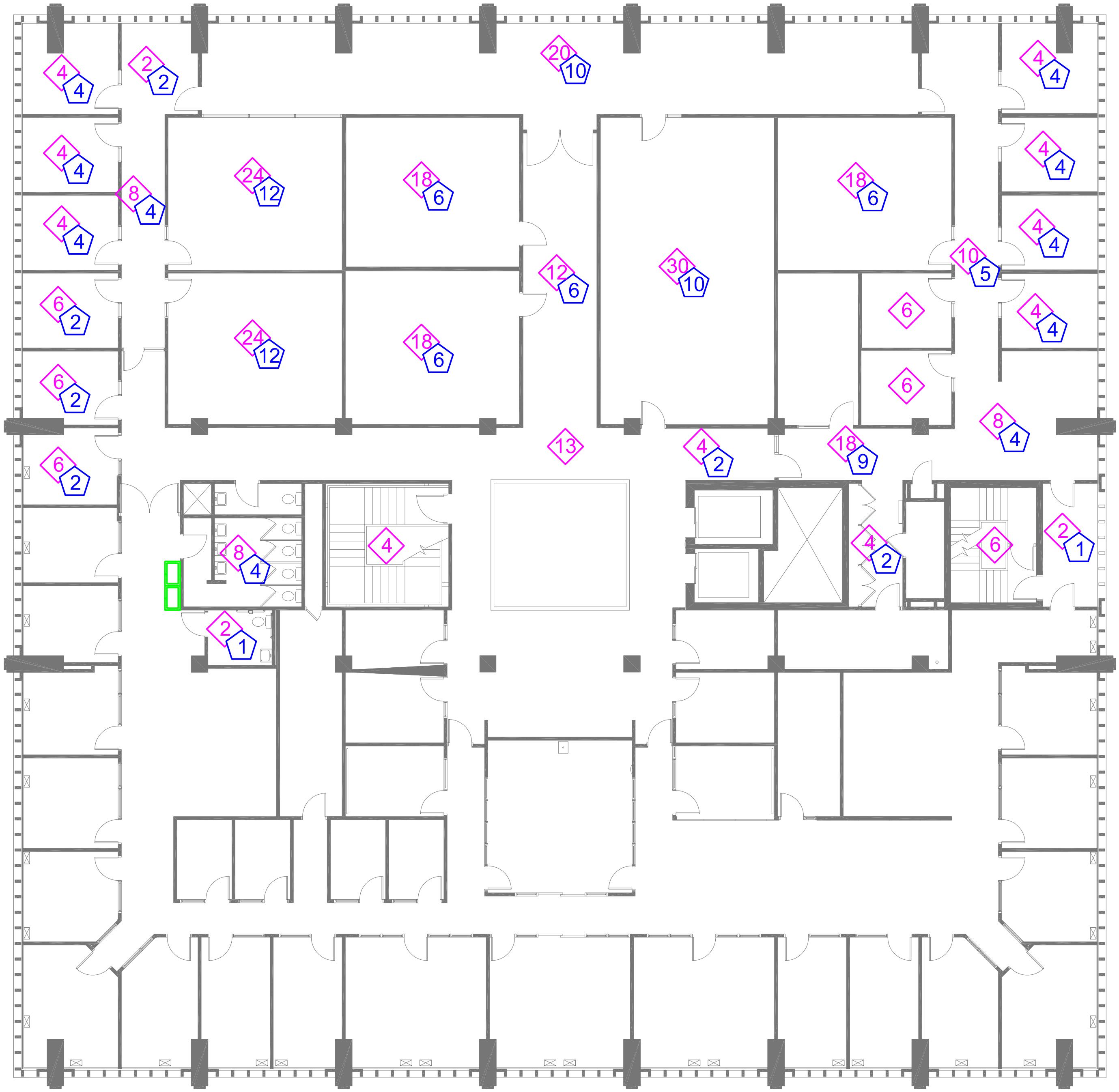
Number of Suspected PCB Containing Light Fixture Ballasts in the Area

CFC Containing Refrigeration Units

N

CLIENT INFO.		
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL Approximate Scale 20 ft	PROJECT No.: 08A-1020 CAD No.: 08A1020F-3 DRAWN BY: S. Rahman DATE: 4/16/08 REVISED BY: DATE:

Hazardous Material Survey : Fifth Level



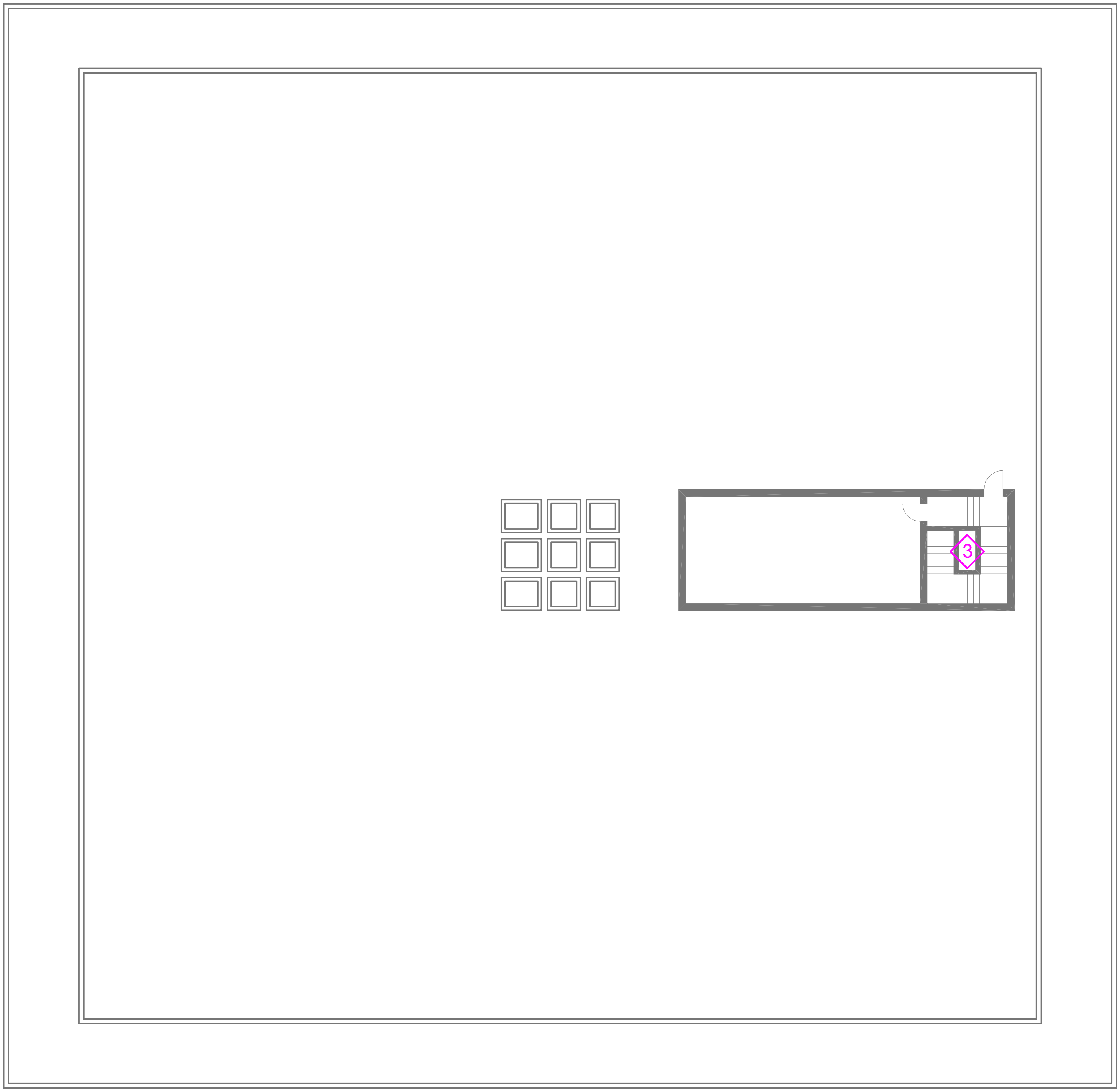
EXPLANATION

- (#, pink diamond) Number of Mercury Vapor Fluorescent Light Tubes in the Area
- (#, blue pentagon) Number of Suspected PCB Containing Light Fixture Ballasts in the Area
- (green rectangle) CFC Containing Refrigeration Units

N

CLIENT INFO.	IHI ENVIRONMENTAL	PROJECT No.: 08A-1020
University of Utah College of Nursing Salt Lake City, Utah	Approximate Scale 20 ft	CAD No.: 08A1020G-3 DRAWN BY: S. Rahman DATE: 4/16/08 REVISED BY: DATE:

Hazardous Material Survey : Penthouse / Roof



EXPLANATION

\# Number of Mercury Vapor Fluorescent Light Tubes in the Area

N

CLIENT INFO.		PROJECT No.:	08A-1020
University of Utah College of Nursing Salt Lake City, Utah	IHI ENVIRONMENTAL	CAD No.:	08A1020H-2
		DRAWN BY:	S. Rahman
		DATE:	4/16/08
	Approximate Scale 20 ft	REVISED BY:	
		DATE:	

Appendix D

ThyssenKrupp Elevator
Americas Business Unit

ThyssenKrupp

April 29, 2008

University of Utah
Attn: Dave Henry

Re: U of U Nursing Elevator Modernization

Dear Dave:

Thank you for the allowing me the opportunity to provide you with a bid proposal for the elevator modernization at the Nursing Building.

After making a site visit and discussing this elevator in depth with your current service technician, we feel that it is in your best interest to modernize this equipment as soon as possible.

The existing Westinghouse equipment is over 40 years old, and most elevators have a useful life of 25-30 years. More important than the age of the equipment, you should consider the reliability and safety of the equipment. The elevators do not have fire service, so the elevators have no way of knowing to let passengers out in the event of a fire. Additionally, the current system allows the car doors to open if the elevator makes a high speed stop.

While addressing these safety issues, the modernization would also make the elevators more energy efficient. In recent studies, it has been proven that changing from the current M/G to the VVVF drive would increase the energy savings by 50%. If you would like a copy of this study, I would be more than happy to provide one to you.

If you have any further questions, please do not hesitate to contact me.

Sincerely,

Rob Williams
Modernization Representative

ThyssenKrupp Elevator

SCOPE BID LETTER April 22, 2008

Attn: Dave Henry

RE: **U of U Nursing Building**
Salt Lake City, UT

The following is our proposal to modernize **Two (2) WESTINGHOUSE TRACTION PASSENGER ELEVATORS,** in the above referenced project per **the following list of qualifications**. We reserve the right to add an amendment to the subcontract subsequent to bid.

BASE BID PRICE: **$262,536.00 (Two Hundred Sixty Two Thousand, Five Hundred Thirty Six).**

Our price is for equipment to be furnished and installed and includes Utah State Sales Tax. This price will remain firm for a period of forty-five (45) days.

Qualifications:

1. **See the attached "Description of equipment form" for a detailed list of features that are included with this proposal**

Please be advised of the following lead times associated with this project:

Preparation of shop drawings for review and approval: *(After receipt of building drawings and notice to proceed)*	3	weeks
Fabrication: *(After receipt of approved shop drawings & executed subcontract)*	6	weeks
Delivery of equipment:	1	week
Installation of elevator system:	8-per elevator	weeks

ThyssenKrupp Elevator can proceed with preparation of elevator shop drawings for review and approval upon receipt of a letter of intent or subcontract agreement. **WE WILL REQUIRE A FULLY EXECUTED SUBCONTRACT AGREEMENT BEFORE THE ELEVATOR EQUIPMENT CAN BE ORDERED.**

We appreciate the opportunity to provide you with a bid for this project. We look forward to the acceptance of our proposal.

Sincerely,

THYSSENKRUPP ELEVATOR COMPANY

Rob Williams
Modernization Sales Representative

ThyssenKrupp Elevator
1840 S. Milestone Dr., Suite B
Salt Lake City, UT 84104
Telephone: (801) 908-7433
Fax: (801) 908-7437
E-mail: rob.williams@thyssenkrupp.com
Internet: www.thyssenkruppelevator.com

Thyssen Krupp Elevator

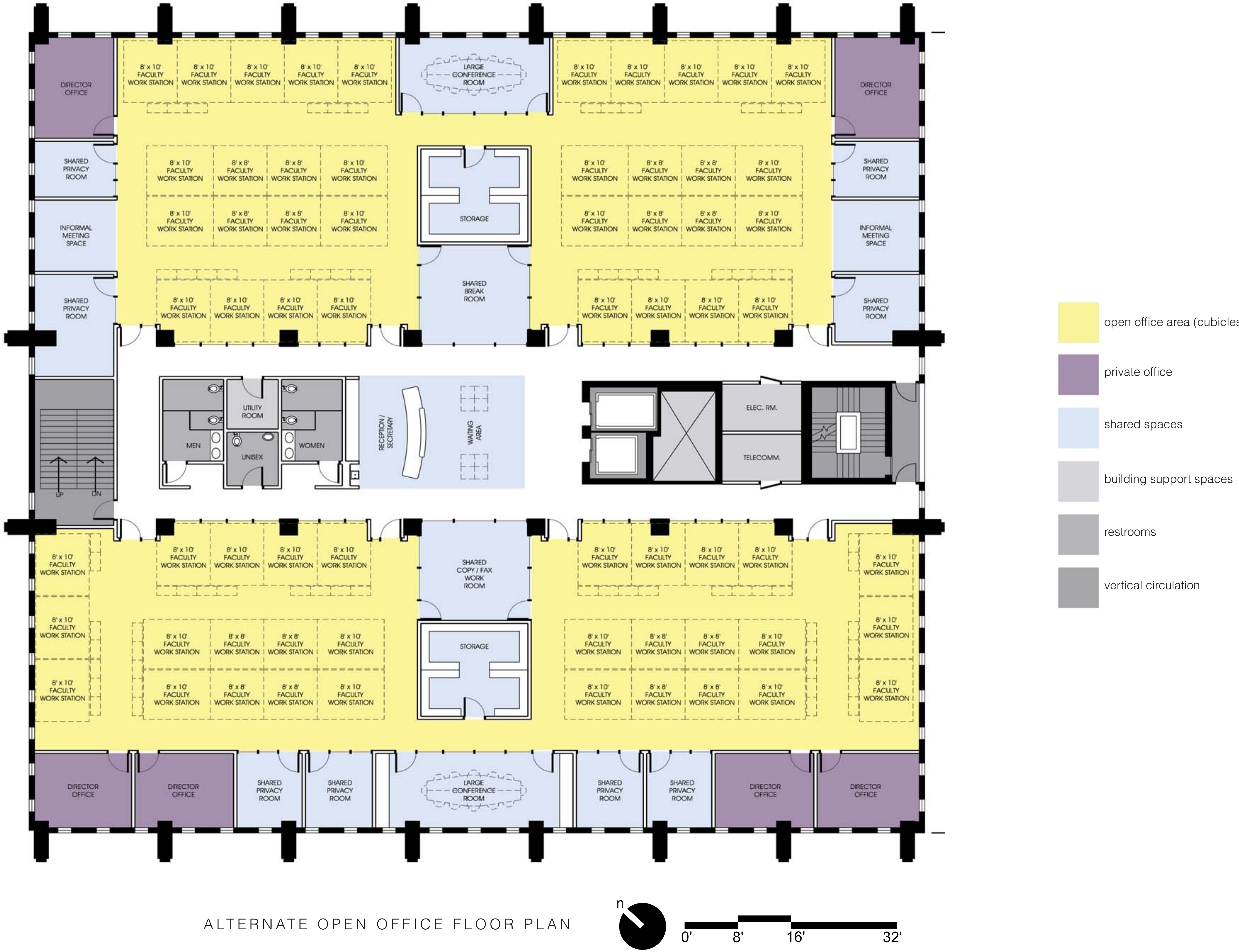
TK

BUILDING
DESCRIPTION OF EQUIPMENT

1) NEW TAC50-04M CONTROLLER
2) NEW GD-1 GEARED TRACTION MACHINE
3) NEW TRACTION STEEL CABLES & WEDGE CLAMP SCHACKLES
4) NEW FLANGE MOUNTED AC MOTOR & VELOCITY ENCODER
5) NEW LOAD WEIGHER & HITCH PLATE
6) NEW RAIL MOUNTED ENCODER
7) NEW ROPE RETAINERS FOR ELEVATOR AND GOVERNOR
8) NEW POSITION TRANSDUCER & LIMIT SWITCH PACKAGE
   (INCLUDES LIMIT SWITCHES, VANES, BRACKETS, ETSD, NORMAL TERMINAL STOPPING DEVICE AND FINAL LIMIT)
9) NEW ThyssenKrupp HD-03 DOOR OPERATION
10) NEW DOOR INTERLOCKS CLOSERS & PICKUP ROLLERS
11) NEW ROPE GRIPPER (HOLLISTER WHITNEY)
12) NEW SEISMIC HOISTWAY EQUIPMENT & CONTROLLER SOFTWARE
13) NEW IMS MACHINE ROOM MONITORING WITH JOB SPECIFIC DIAGNOSTIC TOOL
14) NEW 48" TOE GUARD
15) NEW FIRE SERVICE FEATURES PER 2004 CODE
16) NEW HOISTWAY ACCESS SWITCHES
17) NEW CAR IDENTIFICATION PLATE FOR MAIN EGRESS
18) NEW HOISTWAY JAMB BRAILLE PLATES
19) NEW INSPECTION STATION (TOP OF CAR, WITH LIGHT & 110 OUTLET)
20) PRICE INCLUDES (12 MONTHS WARRANTY SERVICE, ELECTRICAL SUBCONTRACT WORK & STATE INSPECTION FEES)

ThyssenKrupp Elevator
1840 S. Milestone Dr., Suite B
Salt Lake City, UT 84104
Telephone: (801) 908-7433
Fax: (801) 908-7437
E-mail: brandon.williams@thyssenkrupp.com
Internet: www.thyssenkruppelevator.com

Appendix E



ALTERNATE OPEN OFFICE FLOOR PLAN

University of Utah College of Nursing
SUMMARY
ajc architects

Program Areas Eliminated

Faculty Practice

Birthcare Healthcare Crash Rooms/Restrooms/Shower/Changing
Mental Health Practitioners--Counseling Rooms
Caring Connections
Women's Health Practice

Utah Commission on Aging/U of U Center on Aging

Offices

Simulation Learning Center

2 High Fidelity Debriefing Classrooms
Low Fidelity Standardize Patient Rooms
Low Fidelity Case Management Interview Rooms and Crisis Management
Simulation Lab TA Drop In
4 Low Fidelity Patient Rooms

Collaborative Spaces

PhD Seminar Rooms --to HSEB??
Computer Lab 460 --to HSEB??
Student Lounge Areas
SAC Office
Student TA Work Rooms (Similar to 580)

Classrooms

2nd level classroom 205 has been eliminated from the Program SF

Informatics

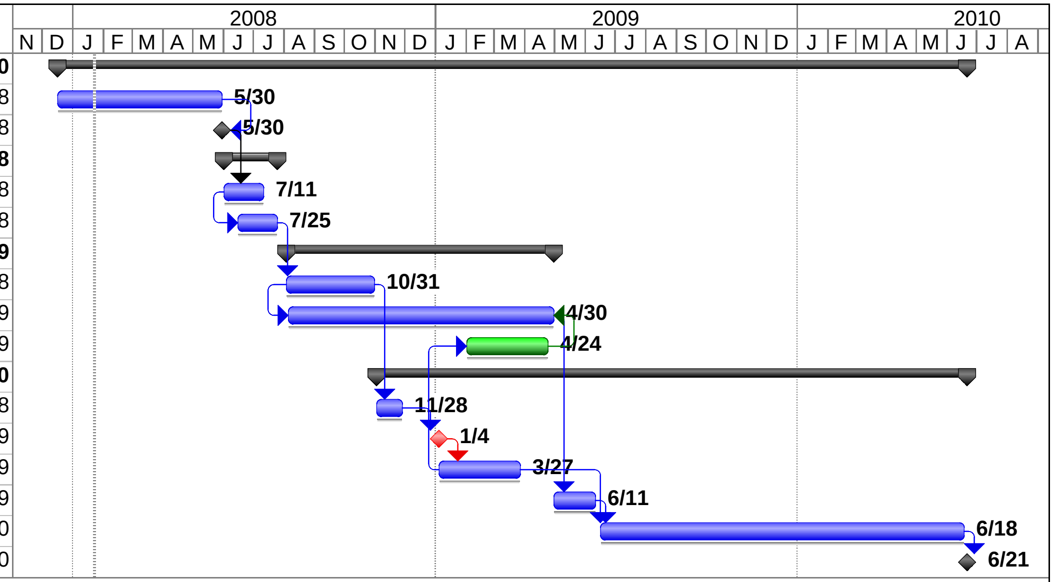
No offices for Informatics

Research

Grad Student Touch Downs on 5th Floor
PhD Student Workroom/RA's Research Space
1 Qualitative Lab
Adjunct Faculty Touchdown

Appendix F

Task Name	Duration	Start	Finish
AS-PROPOSED TIMELINE	**656 days**	**Mon 12/17/07**	**Mon 6/21/10**
PROGRAMMING	120 days	Mon 12/17/07	Fri 5/30/08
Program Complete	1 day	Fri 5/30/08	Fri 5/30/08
TEAM SELECTION	**40 days**	**Mon 6/2/08**	**Fri 7/25/08**
CMGC Selection	30 days	Mon 6/2/08	Fri 7/11/08
AE Selection	30 days	Mon 6/16/08	Fri 7/25/08
DESIGN	**194 days**	**Mon 8/4/08**	**Thu 4/30/09**
Abatement/Demolition Package	65 days	Mon 8/4/08	Fri 10/31/08
Renovation/Remodel Package	192 days	Wed 8/6/08	Thu 4/30/09
As-built Site Investigation	60 days	Mon 2/2/09	Fri 4/24/09
CONSTRUCTION	**426 days**	**Mon 11/3/08**	**Mon 6/21/10**
Bid Abatement/Demo Package	20 days	Mon 11/3/08	Fri 11/28/08
College of Nursing Relocated	1 day	Fri 1/2/09	Sun 1/4/09
Abatement/Demo	60 days	Mon 1/5/09	Fri 3/27/09
Bid Renovation/Remodel Package	30 days	Fri 5/1/09	Thu 6/11/09
Renovation/Remodel	263 days	Wed 6/17/09	Fri 6/18/10
Substantial Completion	1 day	Mon 6/21/10	Mon 6/21/10



Project: UU College of Nursing Renov
Date: Tue 1/22/08

Task		Milestone		External Tasks	
Split		Summary		External Milestone	
Progress		Project Summary		Deadline	

Appendix G

SIMULATION LAB EQUIPMENT PLANNING CHECKLIST

Manikins:
SimMan
SimBaby
ALS Simulator
VitalSim Family of Manikins (Nursing Anne, Megacode Kelly, Nursing Kid/Baby etc)
RA Simulator
Prompt Birthing Simulator
Baby Manikins
Other

Manikin Accessories:
Nursing Wound Modules
Trauma Modules and/or Trauma Makeup Kit
Fundus Pelvis Module
Mastectomy Module
Bleeding Modules & Biological/Chemical Manikin Module
AED Trainer
VitalSim Task Trainers (sounds, blood pressure, arrhythmia)
Regulator Unit to use CO2 or wallmount air/O2 with SimMan/SimBaby
Patient Clothing/Gown/Wig/ID Bracelet, etc.

Patient Room/Cubicle Items:
Cribs/Bassinetts*
Incubators/Warmers*
Beds/Stretchers
Bedside Tables
Bedding/Sheets/Waterproof Covers*
Adjustible Overbed Tray tables
Headwalls – Real or Simulated*
Curtains or Dividers if applicable*
Suction Units
Cabinets/Closets/Manikin Storage Areas*
Oxygen Equipment*
BVM's, NG Tubes, Airways, etc
Woundcare/Dressing Items*
Call Button/Paging Accessories*
Sink*
IV Pumps & Poles
Med Carts*
Surgical Equipment*
Lifts*
Simulated Drug Supplies*
Foley Kits/Bedpans/Peri Care items*
Backboards

Patient Room & Control Room Debriefing Setup:
Video Cameras*
Microphones*
2 Way Mirror Separating Control Room from Patient Care areas*
Laerdal AVS Audio Visual System
Internet/Network Connection & Jacks*
Audio Mixing Equipment*
DVD Recording Equipment*

Computer Lab & Self-Directed Learning:
MicroSim Self-Directed Learning Computer Program
Virtual IV
Virtual Phlebotomy
Heartcode ACLS & BLS Personal Learning Systems
Realtime CPR Feedback w/Laerdal Skillreporter Software (used with Resusci Anne Simulator)

* = Items not available through Laerdal